2/7/86

LPC

LINCOLN PROPERTY COMPANY

9417776

INDEX

TEXAS WATER COMMISSION

February 24, 1986

Mr. Kevin Fleming, Property Manager
Lincoln Property Company
600 Congress Avenue
Suite 2180
Austin, Texas 78701

Dear Mr. Fleming:

RE: Coal Gassification Residue at 100 Congress Avenue

The Texas Water Commission (TWC) is beginning a program which will seek to locate approximately 32 facilities in the State which produced town gas from coal from 1880 to 1930. The TWC will conduct a preliminary assessment and site inspection at any sites which are found to determine if any environmental problems exist or could exist.

We understand that your company discovered such a site during construction activities at 100 Congress Avenue. We request a copy of any data generated by your investigation of the residual coal tars. Your cooperation in this matter would be appreciated and would assist our state-wide program. Please contact me at 463-7793 or Mr. Robert Chapin of my staff at 463-7802 to discuss this matter further.

Sincerely,

Charles R. Faulds

Charles R. Faulds, P.E.
Chief, Superfund Section
Hazardous and Solid Waste Division

RC:je

515

LINCOLN PROPERTY COMPANY

February 7, 1986

Mike Candales
Environmental Health Services
City/County Health Department
15 Waller Street
Austin, Texas 78702

RE: 100 Congress

Dear Mike:

Enclosed is a package of information regarding the proposed treatment facility for the contaminated water. Additionally, I have enclosed test reports from Radian which indicate tests before treatment and theoretical results after treatment. Once we have new testing completed, we will forward copies of the test reports to you for review.

Please call if you have any questions or comments.

Thank you.

Sincerely,

LINCOLN PROPERTY COMPANY

Kevin A. Fleming
Construction Manager

KAF:sd

enclosures

518

LINCOLN PROPERTY COMPANY

February 7, 1986

Andy Kovar
Assistant Director
Water & Wastewater
City of Austin
1524 S. IH 35
Austin, Texas 78704

Dear Andy:

Enclosed is a package of information regarding the proposed treatment facility for the contaminated water. Additionally, I have enclosed test reports from Radian which indicate tests before treatment and theoretical results after treatment. Once we have new testing completed, we will forward copies of the test reports to you for review.

Please call if you have any questions or comments.

Thank you.

Sincerely,

LINCOLN PROPERTY COMPANY

Kevin A. Fleming
Construction Manager

KAF:sd

enclosures

City of Austin

Founded by Congress, Republic of Texas, 1839
Municipal Building, Eighth at Colorado, P.O. Box 1088, Austin, Texas 78767 Telephone 512/477-6511

AUSTIN-TRAVIS COUNTY HEALTH DEPARTMENT
Environmental Health Services Division
15 Waller Street
Austin, Texas 78702

October 17, 1985

Mr. Kevin A. Fleming
Lincoln Property Company
600 Congress Avenue, Suite 2180
Austin, Texas 78701

Re: 100 Congress Building

Dear Mr. Fleming:

Reference is made to the October 7, 1985 correspondence we received concerning contaminated groundwater encountered during the recent excavation at 100 Congress Avenue. After our meeting on September 30, 1985, I directed my staff to explore possible solutions to the disposal problems presented. Due to the nature of the contaminates, and the care which must be taken to ensure an environmentally sound clean-up and disposal program, we are coordinating your discharge request to the City's storm sewer and on to the Colorado River with the Texas Water Commission.

By direction from the Austin District Office of the Texas Water Commission, we are informing you that any remedial action and subsequent discharge into the waters of the State of Texas must be regulated by their Agency through Mr. Tommy Mason, the Director of the Water Quality Division. A discharge permit, if granted by TWC, would stipulate acceptable water quality parameters and a monitoring program to ensure compliance. Therefore, a discharge permit from my department will not be required. However, this does not prohibit our own periodic monitoring and reporting as a means of assisting the State in enforcing the Texas Clean Water Act, as well as ascertaining that the City Storm Sewer and Waterway Discharge Ordinance parameters are being met.

In closing, I strongly agree with Dr. Grimshaw's comments concerning a cautious approach in handling the contamination problems encountered at the project. Although the soil and water analysis from the initial excavation site did not prove to be hazardous under RCRA guidelines, the second phase site containing the subsurface pit of coal-tar waste materials may well qualify for Federal regulation. If in fact, that is the case, I am confident by the way you have handled the situation up to this point, that you are aware of the appropriate regulatory agencies to contact in order to initiate and complete a responsible remediation program.

LINCOLN PROPERTY COMPANY

October 7, 1985

Mr. Fred Rodgers
Chief, Environmental Health Services
Austin/Travis County Health Department
15 Waller Street
Austin, Texas 78701

Dear Mr. Rodgers:

The purpose of this letter is to request permission to discharge fluids meeting requirements placed by your department from the 100 Congress Avenue construction site to the storm sewer of the City of Austin. The source of these fluids appears to be the past disposal practices of the Austin Gas Works, a facility which operated a coal gasification plant to provide fuel for gas lighting of city streets, at the corner of Colorado and West 2nd Street from 1877 to 1928. The principal contaminant present in these fluids is a hydrocarbon-like material most likely derived from coal tar produced as a waste byproduct of the gasification process.

During the excavation of the 100 Congress Avenue site, we encountered the contaminated fluid at the approximate depth of 30-35 feet. Immediately upon the initial encounter of such fluid, we hired Radian Corporation, environmental engineers with expertise in the area of testing and identifying fluids of this type. Included as attachments to this letter are the results of Radian's chemical analysis of the fluids and soils encountered at the site. These results indicate that the fluids contain concentrations in the part per million range of organic compounds which are typically found in coal tar. However, Radian's tests indicate that the fluids and soils fail to exhibit properties which would make them hazardous under the Resource Conservation and Recovery Act (RCRA) regulations. Also included as attachments to this letter are various background documents and meeting notes from discussions held with officials at the Texas Railroad Commission, the Texas Water Commission (formerly TDWR), the Texas Department of Health, the EPA, and the City Wastewater Treatment Department concerning the fluids and soils and the alternatives for disposing of same. This matter was discussed informally with you and members of your staff on 30 September 1985.

Initially, we experienced a flow of these fluids into our excavation pit at a rate of between 10,000 and 20,000 gallons per day. On a temporary basis, and out of an abundance of caution pending the results of the RCRA tests, we disposed of these fluids to an injection well by trucking them to Texas City via Malone Trucking Company. The cost of this trucking procedure is prohibitive and we feel no longer necessary since the results of the RCRA tests indicate that the fluids and soils fail to exhibit properties which would make them hazardous under the RCRA regulations. In a further effort to prevent or limit the fluids from entering the excavation pit, we have installed an injected grout wall to prevent the fluids from entering the pit.

Nevertheless, it is still necessary to collect and dispose of these fluids at the rate of approximately 2,000 gallons per day, due to leakage through the grout wall.

In addition to the 100 Congress Avenue building, our tentative plans call for the construction of Phase II, a nineteen story office building on the adjacent site where it is believed the actual source of these fluids originate. Preliminary geotechnical investigations have revealed a 20 x 50 foot subsurface pit approximately 8-12 feet deep containing coal-tar waste materials. Below this pit and extending a block or more in some directions, are the hydrocarbon contaminated fluids. Precise determinations of the extent of this contamination are hampered by the density of buildings and subsurface utilities in this area which interfere with geotechnical investigations. However, it appears that the contamination may extend under both City streets and adjacent property in the vicinity of 2nd and Colorado. These investigations are continuing, and we will keep you informed as to their progress.

In regard to the discharge of these fluids into the storm sewer system, we are certainly willing to comply with pretreatment or discharge monitoring requirements. We have authorized Radian to conduct a preliminary study of the feasibility of using an activated carbon filtration system to reduce the concentrations of contaminants in the waters discharged to below the limits specified in the City's ordinance. If these tests are positive, and if a treatment system can be demonstrated to achieve the limits specified, we would like you to approve in concept the discharge of these fluids to the City's storm sewer system before we undertake the financial commitments involved in treating the water.

Our view of these fluids is that they are contaminated drainage water from a building construction site. Our expectation is that this problem is temporary and would be resolved before occupancy in mid-to-late 1986. Since we are taking the lead in helping clean up a problem which we did not create, we feel that we should be allowed to dispose of the fluids after appropriate treatment into the storm sewer system as long as the treated waters meet specifications applicable to other construction site drainage waters. As stated above, we are willing to comply with whatever reasonable requirements you may impose with regard to such treatment and discharge monitoring. Test results by Radian Corporation will be available for your review by October 28, 1985. The test results will be based on the perameters agreed to between Robert Wallace of Radian and Carol Cook in your department.

If there are any questions concerning this information, any additional data requirements, or the need for further discussions, please do not hesitate to ask, for we are interested in the expeditious resolution of this problem.

Sincerely,

LINCOLN PROPERTY COMPANY

Kevin A. Fleming
Construction

KAF:sd

enclosures

Site Description and History

Beginning around 1877 the northwest corner of the Lincoln Property Site contained a Town Gasifier plant. Historical records from the Travis County Collection and the Barker History Collection at U.T. indicate that a coal gasification plant existed at the southwest corner of W. 2nd and Colorado Streets. The process used at the 2nd and Colorado Streets plant was called the Water Gas Set. In this process, steam was passed through heated coke and a tank in which oil was sprayed on bricks heated to about 1200°F. The steam picked up the gas from the coke and mixed it with gas from the oil. The mixture then went through purifiers, tar and ammonia extractors.

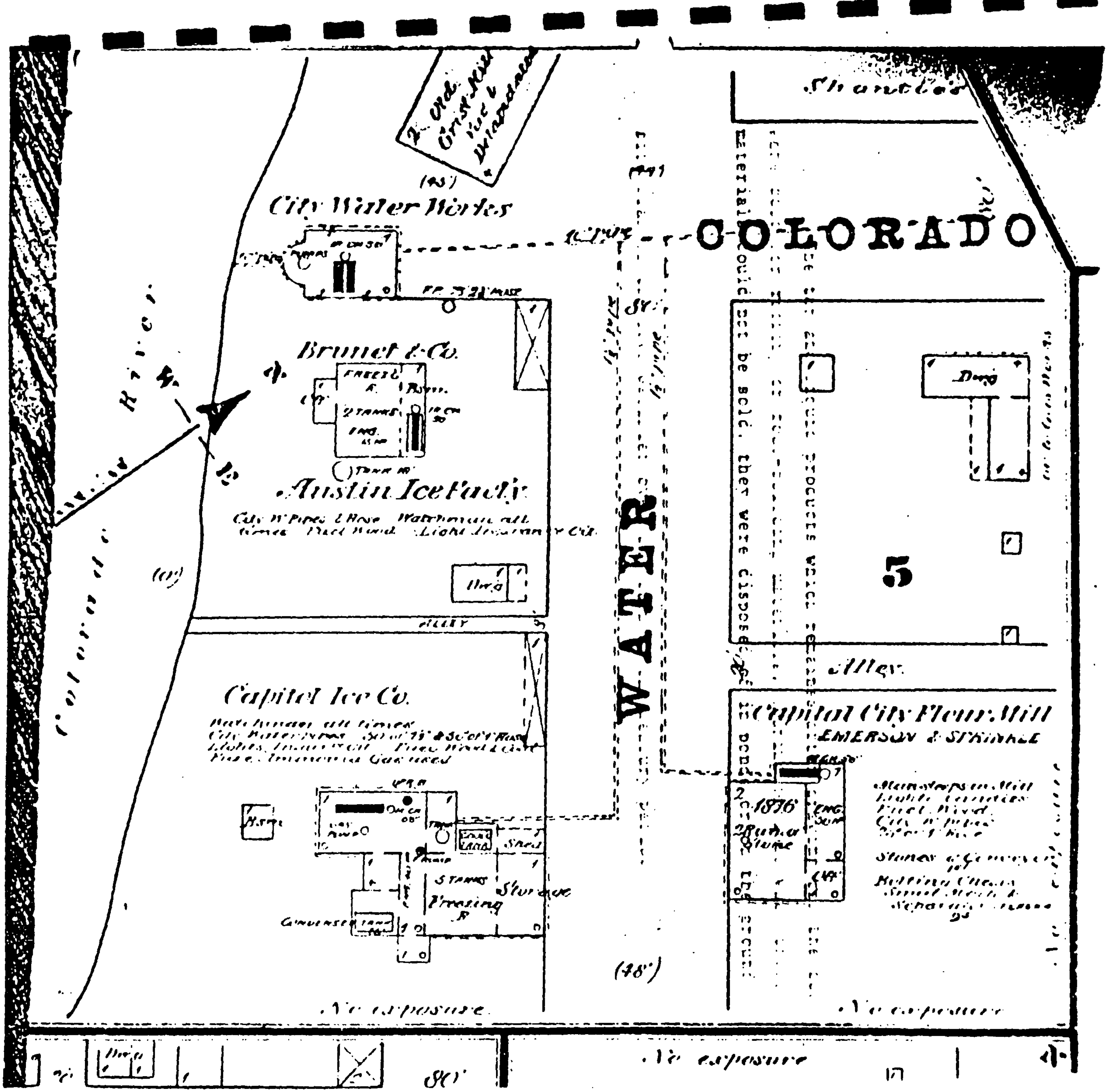
The tar and liquid products which remained after drawing off the gas were sold for roofing or road-building materials. During periods when these materials could not be sold, they were disposed of in ponds or on the ground.

The following copies of fire insurance maps of the site document the site plan of the Town Gasifier over the turn of the century period.

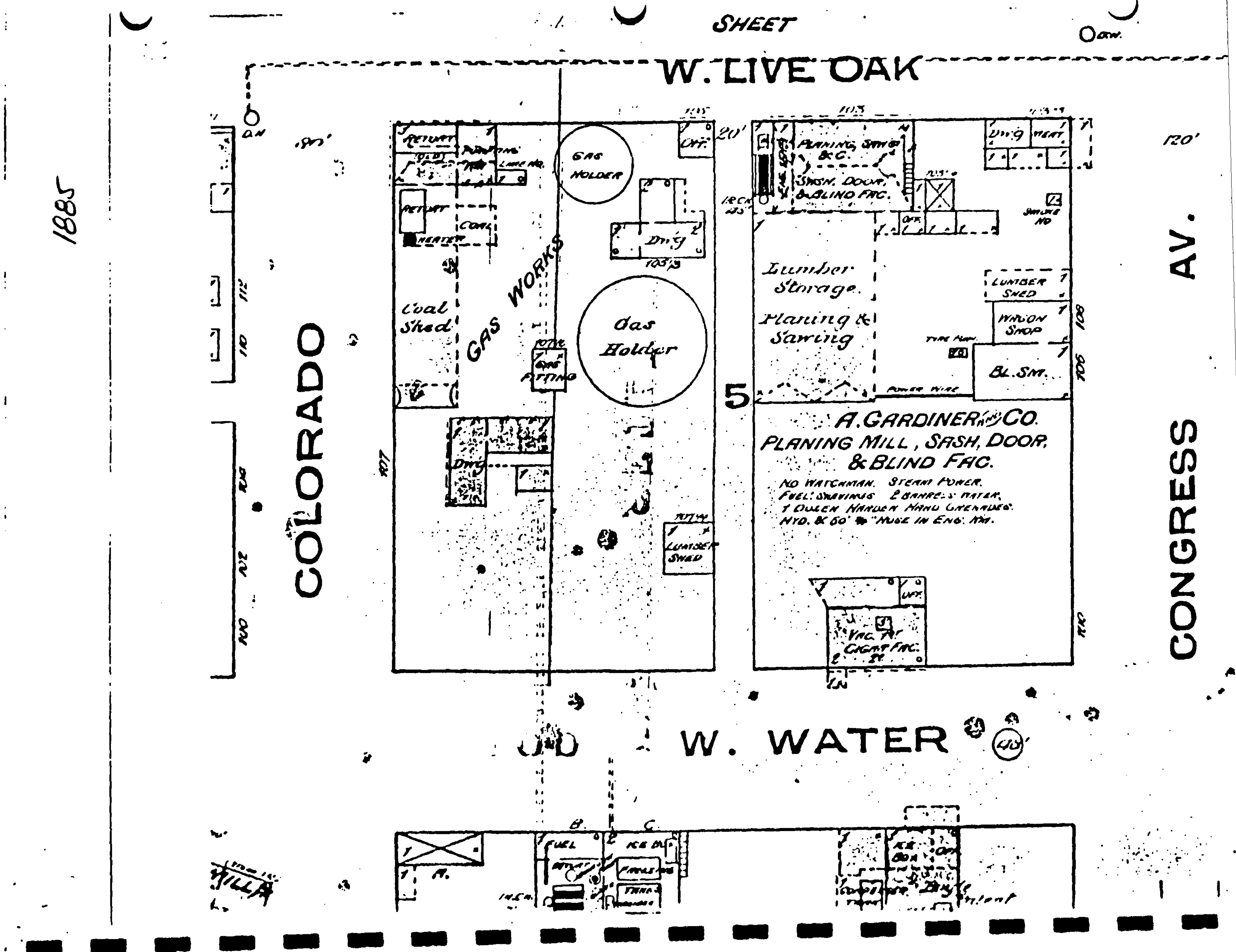
When natural gas came to Austin in 1928 the block in question converted to an ice works.

The northeast side of the site at Lincoln Property Company's excavation site has been a flour mill, lumber yard, light wood works manufacturing and at times, a cotton mill. After about 1920 the area was used for light retail, drugstores and restaurants.

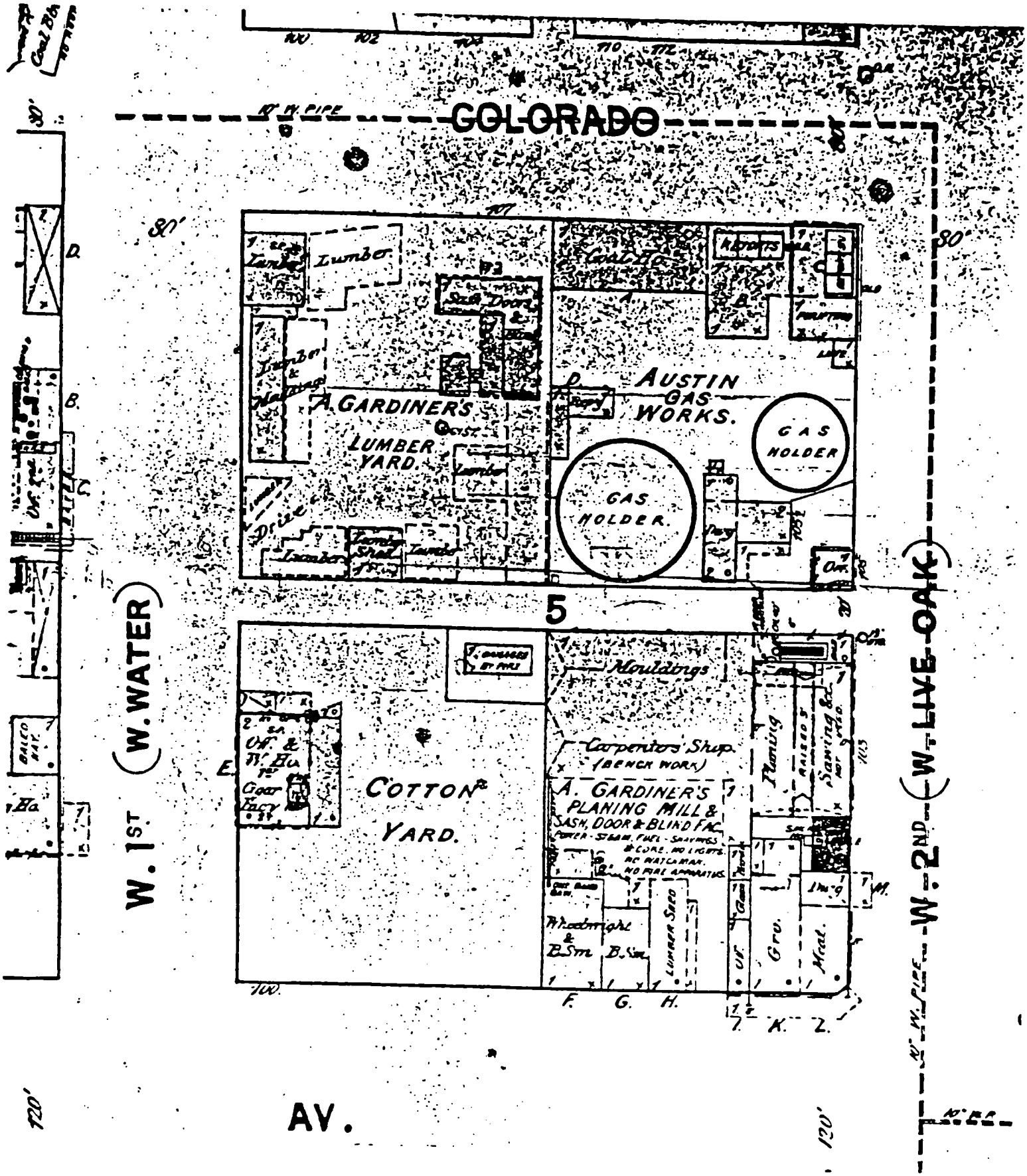
Currently, the site is occupied by a large steel fabricated warehouse on the west side along Colorado Street. To the north is Nalle Plastic Company, and a transmissions repair shop. To the west is an empty lot used for parking by the City of Austin. Congress Avenue borders on the east and 1st Street is south between the site and Town Lake. To the northwest is the former Walter Tips Hardware.

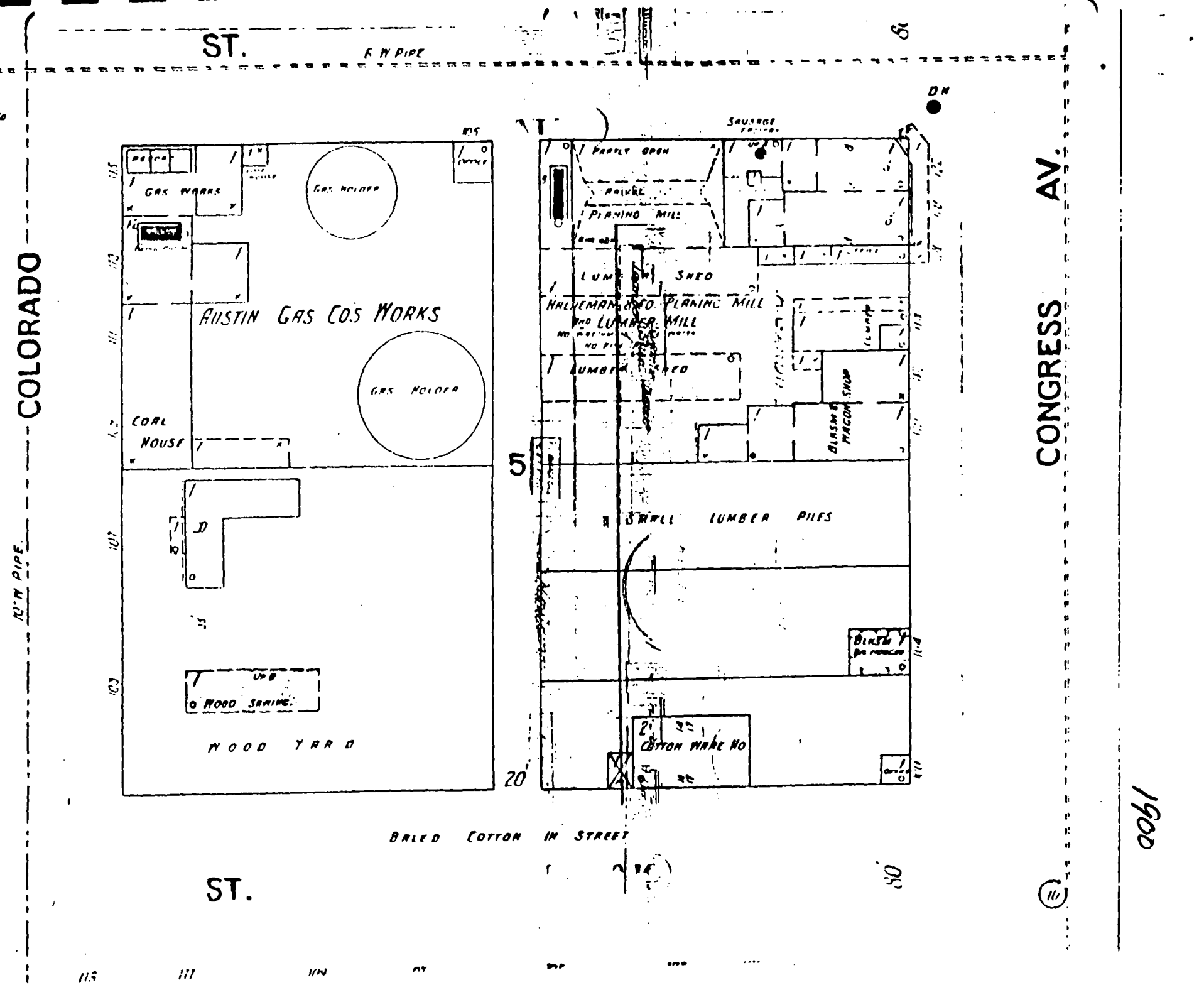

City Water Works
COLORADO
Brunet & Co.
Austin Ice Fact'y
WATER
5
Alley
Capitol Ice Co.
Capital City Flour Mill
Storage
No exposure
No exposure
No exposure

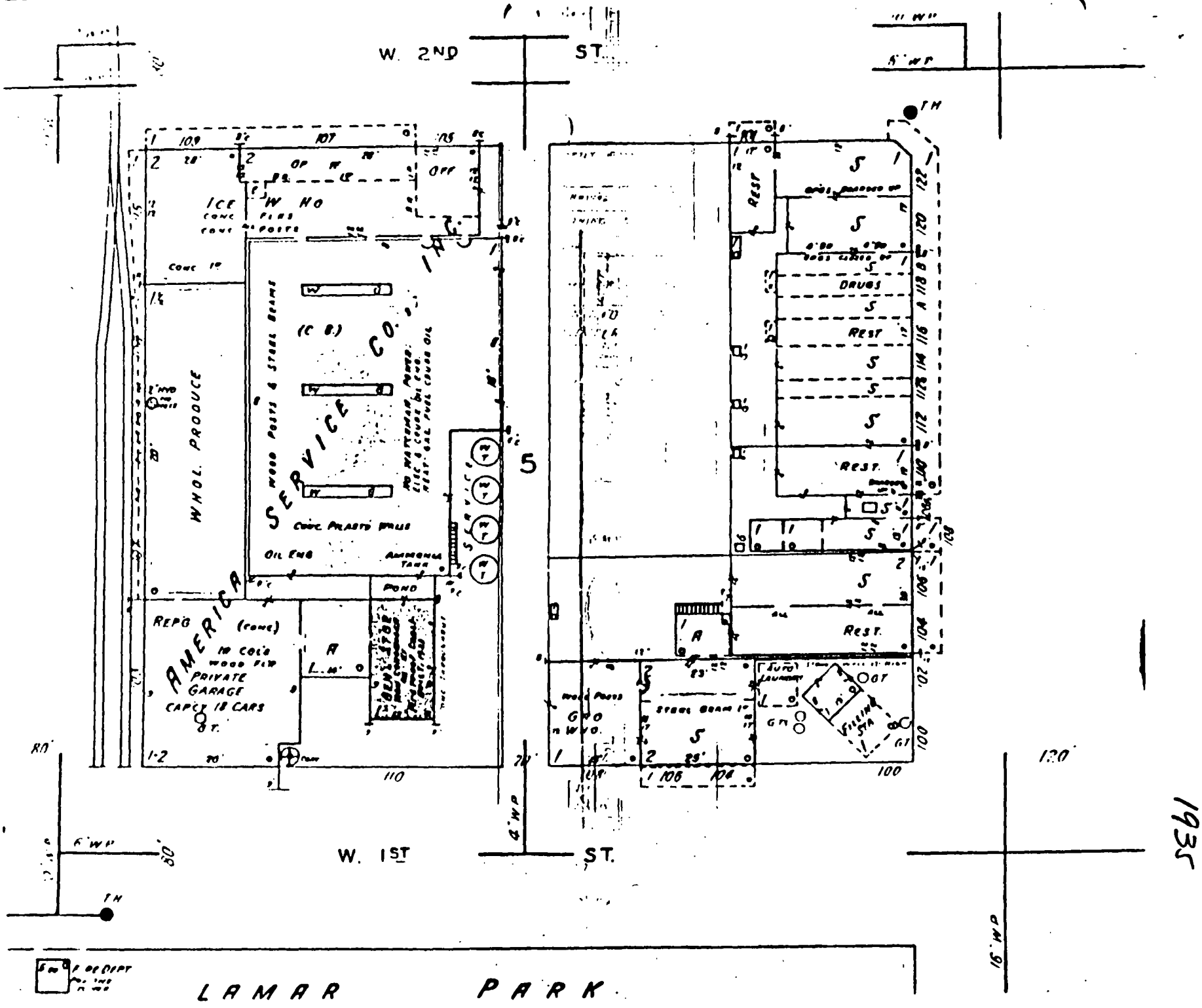
1877


SHEET
1885
W. LIVE OAK
COLORADO
GAS WORKS
GAS HOLDER
Gas Holder
RETORT
COAL
Coal Shed
Dwg
OFF.
GAS FITTING
LUMBER SHED
5
PLANING, SAWG &C.
SASH, DOOR, & BLIND FAC.
Lumber Storage.
Planing & Sawing
LUMBER SHED
WAGON SHOP
BL. SM.
120'
A. GARDINER AND CO.
PLANING MILL, SASH, DOOR, & BLIND FAC.
NO WATCHMAN. STEAM POWER.
FUEL: SHAVINGS. 2 BARRELS WATER.
HYD. & 60' HOSE IN ENG. RM.
VAC. AT CIGAR FAC.
CONGRESS AV.
W. WATER
FUEL
ICE BOX

1889


COLORADO
W. 1ST (W. WATER)
W. 2ND (W. LIVE OAK)
AV.
A. GARDINER'S LUMBER YARD.
AUSTIN GAS WORKS.
GAS HOLDER
GAS HOLDER.
COTTON YARD.
A. GARDINER'S PLANING MILL & SASH, DOOR & BLIND FAC.
Carpenters Shop (BENCH WORK)
Mouldings
Planing
Sawing &c
Lumber Shed
Gro.
Meat.
5
80'
120'


ST.
COLORADO
CONGRESS AV.
ST.
AUSTIN GAS COS WORKS
GAS WORKS
GAS HOLDER
GAS HOLDER
COAL HOUSE
WOOD YARD
WOOD SAWING
PLANING MILL
LUMBER SHED
SMALL LUMBER PILES
COTTON WARE HO
BALED COTTON IN STREET
5
20


W. 2ND ST.
W. 1ST ST.
LAMAR PARK
AMERICA SERVICE CO.
ICE
WHOL. PRODUCE
REPO (rear)
PRIVATE GARAGE
CAPCY 18 CARS
REST.
DRUGS
POND
OIL TNK
AMMONIA TANK
(C.B.)
110
120
100
1935

RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

J. H. MORROW, P.E.
Director
JERRY W. MULLICAN
Director of Underground
Injection Control

1124 S. IH 35 | CAPITOL STATION — P. O. DRAWER 12967 | AUSTIN, TEXAS 78711-2967

August 7, 1985

Kevin A. Fleming
Lincoln Property Company
600 Congress Avenue, Suite 2180
Austin, Texas 78701

Re: Coal Gasification Waste

Dear Mr. Fleming:

We have received your request to inject oily waste from your construction site at 100 Congress Avenue into a Railroad Commission permitted disposal well. You indicate the waste is a waste or by-product from a coal gasification process. Disposal wells subject to Railroad Commission jurisdiction are permitted to dispose of wastes generated from activities associated with oil and gas exploration, development, and production. Since your waste is not an "oil and gas waste," it may not be injected into a Railroad Commission permitted disposal well.

Sincerely yours,

William H. Barnes

William H. Barnes, Legal Counsel
Underground Injection Control

WHB/jcb

LINCOLN PROPERTY COMPANY
600 Congress, Suite 2180
Austin, Texas 78701

August 9, 1985

Mr. David Barker
Texas Department of Water Resources
Solid Waste & Spill Response Section
1700 North Congress
Austin, Texas 78711

Re: 100 Congress Building

Dear Mr. Barker:

This letter will summarize the results of the meeting that I attended in your office on July 18, 1985 in connection with the contaminated fluids and soils Lincoln Property Company has discovered during excavation of the building site at 100 Congress Avenue. Also attending the meeting were Dick Martin from your office, Tom Grimshaw, Will Boettner and Lynne Zimmerman with Radian Corporation and Steve Drenner, our attorney with Jenkens & Gilchrist.

At the meeting, I gave you a brief description of the project and the facts surrounding our discovery of the contaminated fluids. Radian explained in more detail the status of their chemical analysis of the fluid. Radian concluded that at that time their best guess was that the fluid was contaminated due to ground water coming in contact with a coal tar like substance. Radian's conclusion was based primarily on two separate sets of evidence. First, Radian's historical research indicated that a coal gassification plant was previously located on the site adjacent to the 100 Congress site. Coal tar was a by-product of the coal gassification process. Second, Radian's chemical analysis supported the proposition that the substance contaminating the fluid was coal tar. Radian and I described to you our short-term and long-term plans for dealing with the problem.

After Radian and I finished our presentation, you and Dick Martin indicated that you believed that the Texas Department of Health was the governmental agency in Texas which had jurisdiction over our situation. You and Dick indicated that since we were excavating for a project which was a "people-oriented project" (i.e. office usage) and not for industrial purposes, our problem fell under the jurisdiction of the Texas

Department of Health. You further indicated that the Texas Department of Health would classify the waste as either "hazardous" or "non-hazardous". This classification would be made based on the results of a RCRA test. Finally, you indicated that if the fluid was classified as "hazardous" waste by the Department of Health, effective as of September 1, 1985, the Texas Department of Water Resources would have jurisdiction over our problem due to the reorganization of certain state agencies.

You mentioned that the State of Texas would be creating a fund in the future which potentially could help Lincoln Property Company pay for the cost of the necessary clean-up. This fund will be created pursuant to the terms of an amendment to the Solid Waste Act. However, you indicated that the fund was not in place at this time.

Finally, Dick said that if the fluids are classified as "hazardous" by the Texas Department of Health, there was a possibility that after September 1, 1985, the Texas Department of Water Resources might declassify the fluid to a "Class II" classification.

If this summary does not accurately reflect our meeting of July 18, please let me know. We followed your advise and have been working with the Texas Department of Health with regard to our problem, and I would be glad to bring you up to date on the situation if you desire.

Yours truly,

Kevin Fleming

cc: Will Boettner

Texas Department of Health

Robert Bernstein, M.D., F.A.C.P.
Commissioner

1100 West 49th Street
Austin, Texas 78756
(512) 458-7111

Robert A. MacLean, M.D.
Deputy Commissioner
Professional Services

Hermas L. Miller
Deputy Commissioner
Management and Administration

AUG 6 1985

Texas Waste Systems, Inc.
c/o Mr. Kevin D. Yard, P.E.
Region Engineer
Waste Management, Inc.
7676 Hillmont, Suite 195
Houston, Texas 77040

Subject: Solid Waste - Travis County
Texas Waste Systems, Inc. - Permit No. 249
0.2 Mile N of US-290, W of Giles Road,
& 5.1 Miles E of US-290 & IH-35 Int.

Dear Mr. Yard:

This letter will confirm the telephone conversation between L. E. Mohrmann, Ph.D., C.P.C., of our staff, and Mr. Jim Hackfeld of Austin Community Disposal on July 29, 1985, concerning disposal of the contaminated soil from the construction site at 100 Congress Avenue in Austin, Texas.

Our staff has met with Mr. Kevin Fleming of Lincoln Property and members of the staff at Radian Corporation concerning the nature and amount of the contamination in the soil from the excavation site. The soil has been contaminated through contact with ground water which has been in contact with a coal tar-like material apparently buried on the site of an old coal gasification plant which generated illuminating gas between 1891 and 1920.

The Department has no objection to any Type I municipal solid waste site accepting this contaminated soil. Provided there is no odor problem with the contaminated soil, it may be used for daily cover material if appropriate for daily cover material. When the coal tar-like waste is excavated, it and the immediately surrounding soil must be buried below natural ground level and may not be used for intermediate cover material.

If you have any questions concerning this letter or if we may be of any assistance to you regarding solid waste management, you may contact Dr. Mohrmann here in Austin at telephone number (512) 458-7271 or you may prefer to contact Mr. Charles H. Wentworth, P.E., Regional Director of Environmental and Consumer Health Protection at P.O. Box 190, Temple, Texas 76501; telephone number (817) 778-6744.

Sincerely yours,

L. B. Griffith, Jr., P.E., Director
Surveillance and Enforcement Division
Bureau of Solid Waste Management

LEM:gsr

cc: Region 6, TDH
Austin-Travis County Health Department
Austin Community Disposal Company, Inc.
Mr. Kevin Fleming, Lincoln Property
Mr. Jim McCutchan, Radian Corporation

Texas Department of Health

Robert Bernstein, M.D., F.A.C.P.
Commissioner

1100 West 49th Street
Austin, Texas 78756
(512) 458-7111

Robert A. MacLean, M.D.
Deputy Commissioner
Professional Services

Hermas L. Miller
Deputy Commissioner
Management and Administration

AUG 6 1985

Mr. Mike Tawny
Austin District Manager
Browning-Ferris, Inc.
P.O. Box 1786
Del Valle, Texas 78617

Subject: Solid Waste - Travis County
BFI/Sunset Farms - Permit No. 1447
Immediately S & W of Giles & Blue Goose
Roads Int., 5.0 Miles E of US-290 &
IH-35 Int. and N of US-290

Dear Mr. Tawny:

This letter will confirm the telephone conversation between L. E. Mohrmann, Ph.D., C.P.C., of our staff, and you on July 29, 1985, concerning disposal of the contaminated soil from the construction site at 100 Congress Avenue in Austin, Texas.

Our staff has met with Mr. Kevin Fleming of Lincoln Property and members of the staff at Radian Corporation concerning the nature and amount of the contamination in the soil from the excavation site. The soil has been contaminated through contact with ground water which has been in contact with a coal tar-like material apparently buried on the site of an old coal gasification plant which generated illuminating gas between 1891 and 1920.

The Department has no objection to any Type I municipal solid waste site accepting this contaminated soil. Provided there is no odor problem with the contaminated soil, it may be used for daily cover material if appropriate for daily cover material. When the coal tar-like waste is excavated, it and the immediately surrounding soil must be buried below natural ground level and may not be used for intermediate cover material.

Mr. Robert Lawton
Page 2

If you have any questions concerning this letter or if we may be of any assistance to you regarding solid waste management, you may contact Dr. Mohrmann here in Austin at telephone number (512) 458-7271 or you may prefer to contact Mr. Charles H. Wentworth, P.E., Regional Director of Environmental and Consumer Health Protection at P.O. Box 190, Temple, Texas 76501; telephone number (817) 778-6744.

Sincerely yours,

L. B. Griffith

L. B. Griffith, Jr., P.E., Director
Surveillance and Enforcement Division
Bureau of Solid Waste Management

LEM:gs

cc: Region 6, TDH
Austin-Travis County Health Department
Mr. Mike Lawlor, Vice-President, BFI
Mr. Andy Nydy, Region Landfill Manager, BFI
Sunset Farms Landfill Manager
Mr. Kevin Fleming, Lincoln Property
Mr. Jim McCutchan, Radian Corporation

City of Austin

Founded by Congress, Republic of Texas, 1839
Municipal Building, Eighth at Colorado, P.O. Box 1088, Austin, Texas 78767 Telephone 512/477-6511

September 23, 1985

Mr. Kevin A. Fleming
Lincoln Property Company
600 Congress Avenue, Suite 2180
Austin, Texas 78701

Re: Request to Discharge Drainage Fluids

Dear Mr. Fleming:

In response to your request to discharge drainage fluids from the Lincoln Property construction site at 100 Congress Avenue, the Utility cannot accept these fluids to any of its treatment facilities at this time.

Any fluids discharged to Austin's sanitary storm sewer systems must meet certain quality standards. From the information you provided in your letter requesting permission to discharge fluids from the excavation site at First Street and Congress Avenue into the sanitary sewer system, such a discharge would not be allowed without extensive pre-treatment.

The level of treatment required may treat the fluid to a level acceptable for storm sewer discharge. Since the Water and Wastewater Utility is currently experiencing capacity limitations at all three (3) of its treatment facilities, I suggest that you work closely with Mr. Fred Rogers, whom you have previously contacted, to obtain a permit for storm sewer disposal of these fluids.

My staff will be happy to answer any questions you may have concerning existing treatment technology for these type fluids. If you wish any of this information, please contact Mr. Jack Gatlin, Supervisor, Industrial Waste Control, at 926-0316.

Sincerely,

James E. Thompson

James E. Thompson, P.E., Director
Water and Wastewater Utility

JET:JHG:src

cc: Andrew P. Covar
J. Chris Lippe
J. H. Gatlin

PAGE 1 Analytical Serv REPORT LAB # 85-07-165

RECEIVED: 07/22/85 07/24/85 14:23:43

REPORT TO: Radian
Bl. 4
Austin

ATTEN: Robt. Wallace/Will Boettner

CLIENT: MAXIN SAMPLES: 6
COMPANY: Maxin Eng.
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: GRIMSHAW

WORK ID: soil and water, RCRA
TAKEN: LH
TRANS: MW
TYPE:
P.O. #: 229-025-01-20
INVOICE: under separate cover

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 LP-001
02 LP-002
03 LP-001 EP
04 LP-002 EP
05 LP-003
06 LP-004

Analytical Serv TEST CODES and NAMES used on this report

COR PH	Corrosivity
EP MET	RCRA Metals
IGNIT	Ignitability-aqueous
IGNITS	Ignitability-solids
MOIST	percent moisture
PH A	pH
REACT	Reactivity

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 05 (entered units)	Sample 06 (entered units)
COR_PH pH units	6.29	6.34		
IGNIT degrees F			>160	>160
IGNITS yes/no	no	no		
MOIST %	10	18		
PH_A pH units			7.96	7.97
REACT + or -	-	-	-	-

Analytical Serv REPORT LAB # 85-07-165

RECEIVED: 07/22/85

Results by Sample

SAMPLE ID LP-001 EP FRACTION 03A TEST CODE EP MET NAME RCRA Metals

Date & Time Collected not specified Category

DATE ANALYZED 07/22/85 VERIFIED BY GMC

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	0.017	AS	Arsenic	0.08*
BA	Barium	0.56	HG	Mercury	<0.0002
CD	Cadmium	<0.002	PB	Lead	<0.08
CR	Chromium	0.024*	SE	Selenium	0.08*

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit.
All elements determined by ICPES except Hg.

Analytical Serv REPORT LAB # 85-07-165
RECEIVED: 07/22/85
Results by Sample

SAMPLE ID LP-002 EP FRACTION Q4A TEST CODE EP MET NAME RCRA Metals
Date & Time Collected not specified Category

DATE ANALYZED 07/22/85 VERIFIED BY GMC

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	0.015	AS	Arsenic	0.08*
BA	Barium	0.36	HG	Mercury	<0.0002
CD	Cadmium	<0.002	PB	Lead	<0.08
CR	Chromium	0.022*	SE	Selenium	<0.08

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit.
All elements determined by ICPES except Hg.

PAGE 5 Analytical Serv REPORT LAB # 85-07-165
RECEIVED: 07/22/85 Results by Sample

SAMPLE ID LP-003 FRACTION 05A TEST CODE EP MET NAME RCRA Metals
Date & Time Collected 07/19/85 Category

DATE ANALYZED 07/22/85 VERIFIED BY GMC

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	<0.002	AS	Arsenic	<0.06
BA	Barium	0.28	HG	Mercury	<0.0002
CD	Cadmium	<0.002	PB	Lead	<0.08
CR	Chromium	0.13	SE	Selenium	<0.08

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit.
All elements determined by ICPES except Hg.

RADIAN

PAGE 6 Analytical Serv REPORT LAB # 85-07-165
RECEIVED: 07/22/85 Results by Sample

SAMPLE ID LP-004 FRACTION 06A TEST CODE EP MET NAME RCRA Metals
Date & Time Collected 07/19/85 Category

DATE ANALYZED 07/22/85 VERIFIED BY GMC

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	<0.002	AS	Arsenic	0.01*
BA	Barium	0.28	HG	Mercury	<0.0002
CD	Cadmium	<0.002	PB	Lead	<0.08
CR	Chromium	0.010*	SE	Selenium	<0.08

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit.
All elements determined by ICPES except Hg.

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01C	!	LOG_IN	01D	!	LOG_IN	01E	!	LOG_IN			
02C	!	LOG_IN	02D	!	LOG_IN	02E	!	LOG_IN			
03B	!	LOG_IN									
04B	!	LOG_IN									
05C	!	LOG_IN	05D	!	LOG_IN	05E	!	LOG_IN			
06C	!	LOG_IN	06D	!	LOG_IN	06E	!	LOG_IN	06F	!	LOG_IN

7/25/85
LTH

LINCOLN PROPERTIES

OIL FROM PIT

Total suspended solids	66 mg/kg
Tar (hexane soluble solids)	39 mg/kg
Total dissolved solids	126 mg/kg
Volatiles (GC/MS)	8.2 mg/kg

RADIAN
CORPORATION

229-025

18 July 1985

Mr. Kevin Fleming
Lincoln Property Company
600 Congress Avenue, Suite 2180
Austin, Texas 78701

SUBJECT: Status Summary and Current Recommendations

Dear Mr. Fleming:

This letter is to summarize our activities to date at the 100 Congress Avenue site and to present certain recommendations for future activities at the site.

Our involvement at the site began with a sampling trip during which liquid samples were collected and submitted to Radian laboratories for analysis for organic components and selected other parameters. During this initial activity and subsequent actions, our actions and recommendations have been influenced by your urgent requirements for continuing progress in construction at the site.

As preliminary laboratory results were coming in last week, Lincoln requested that a way be found to dispose of contaminated water pumped from the construction pit to allow excavation progress to be made. Based upon preliminary analytical results from our labs and from verbal reports of samples analyzed by Spectrix, we believed the hydrocarbon contaminant to be derived from crude oil sources. There were also reports of an abandoned oil well in the vicinity. Based on this information, we suggested that arrangements be made to dispose of the contaminated water into a Railroad Commission approved brine injection well. Water was subsequently disposed of at a well located near Giddings, Texas.

Additional analytical results obtained from the lab on 15 July caused us to question our original belief that the material is crude oil. In addition, conversations with another group within Radian revealed that a coal gasification ("town gas") plant was previously located at the 100 Congress Avenue site. This group had conducted a study for the Environmental Protection Agency which was a nationwide survey of locations of such small, previously existing gasification plants. Thus, it became apparent that the waste, while a hydrocarbon material, was not crude oil as originally believed.

It now appears that the hydrocarbon material is most likely derived from coal tar produced by the gasification plant. When we reached this preliminary conclusion on 15 July, we immediately recommended that the contaminated

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liquids no longer be sent to the injection well for disposal. At that point, Lincoln elected to use large tanks for temporary storage of contaminated fluids that were being pumped from the site.

During the same timeframe, Lincoln and their contractors indicated that contaminated soil needed to be removed from the pit to allow excavation to resume. During a meeting at the project site last week, we recommended that if soil removal was absolutely necessary, the soil be stockpiled at a location where environmental contamination would be prevented pending determination of the proper disposition of the material. It was decided by Lincoln at that time that the soil be placed in the warehouse adjoining the excavation pit.

The regulatory status of the hydrocarbon liquids and associated potentially contaminated soil and ground water is presently uncertain, but it may be considered by regulatory agencies as Class I waste, a fact which we communicated to Lincoln during a meeting in your offices on 16 July 1985. During that meeting, several action items were verbally agreed to which we have followed up on. Listed below are our recommendations regarding these action items.

Potential Worker Exposure

During our initial activities and meetings at the site on 1 July 1985, we indicated that we would be providing appropriate safety protection for our personnel during sample collection, but that we did not generally prepare plans for the protection of personnel of other firms under these circumstances. We suggested to Mr. Cooley at the time that consideration be given to providing such protection to onsite workers when the material is disturbed.

It was noted during our meeting on the morning of 16 July that workers had been observed earlier in the day working in and around potentially contaminated soil and water in the excavation pit. One of the action items requested during the meeting was for Radian to investigate the proper method of ensuring worker protection at the site. We stated again, at that time, that except for "common sense" measures, such as rubber boots and gloves, Radian generally does not provide the service of preparing worker protection plans for contractor personnel. Such measures do not, of course, purport to be sufficient to ensure worker protection. Radian does routinely prepare and implement safety plans for our own staff when they are engaged in sampling and related activities at potentially contaminated sites.

On the afternoon of 16 July, we telephoned Mr. Mefford of your firm and advised that measures be taken to prevent exposure of site workers to the potentially contaminated water and soil, primarily by preventing them from entering the potentially contaminated area. We also recommended that Lincoln engage the services of a competent industrial hygiene and occupational safety consulting firm and gave the following firms as candidates:

-Southwest Occupational Health Services, Houston, 713/228-8246

-Firemen's Fund Risk Management Services, Inc., Dallas, 214/573-4025

These firms should be able to assist Lincoln in determining appropriate water protection measures.

Superfund Notification

After examining the existing waste analysis data, Radian determined that a number of the constituents and compounds present were hazardous substances under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("Superfund"). Releases to the environment (including ground water) of most of the hazardous substances noted in the 100 Congress Avenue liquid wastes are required to be reported to the National Response Center [(800)424-8802] in quantities of one pound or more per day, the minimum reportable quantity level indicative of their hazardousness.

Based on this determination, Radian advised Lincoln Property and their attorneys, Jenkins and Gilchrist, on 16 July that it appeared that an immediate Superfund release notification was legally required, and that failure to notify might subject Lincoln Property to civil and criminal penalties. Radian advised that case law construing the release notification provision of the Superfund Act suggested that the duty to notify arises as soon as a "person in charge" of a facility has reasonable evidence that a release of a hazardous substance is occurring: he cannot take time to establish and clarify all relevant facts (e.g., daily release quantities) before making the required "immediate" notification.

Subsequent to the 16 July meeting, Radian clarified that Lincoln Property should make the Superfund notification to both the National Response Center and the Spill Response Unit of the Texas Department of water Resources [(512)463-7727, David Barker]. In addition, TDWR indicated that its spill reporting requirements were more stringent than the Superfund requirements in the sense that any quantity of hazardous substance released to waters in the State (including ground water) is reportable. Radian, therefore, advises Lincoln to notify both the National Response Center and TDWR of the 100 Congress avenue release as soon as possible.

Liquids Management

Since discontinuation of the use of the injection well, liquid has been pumped from the excavation and temporarily stored onsite in tanks. In view of Lincoln's interest in continuing excavation without interruption, Radian recommends that the liquid currently present on the site be declared a Class I liquid and arrangements be made to dispose of the onsite liquids, as well as liquids produced for an interim period, at a Class I disposal well. Perhaps the same firm which has previously hauled the liquids, which also operates a Class I injection well, can receive and dispose of the liquids for this interim period. Radian is researching with the TDWR the appropriate

manifesting procedures for sending the liquids offsite for disposal. At Lincoln's request, Radian will research other disposal options for the longer term. It is presumed that TDWR will allow redesignation of the liquids as Class II if the results of sample analysis support it.

Solids Management

There are two components of the management of potentially contaminated soils at the site -- the soil currently in the warehouse and the soil remaining in the excavation. These two are dealt with separately below.

The proper disposition of the soil in the warehouse will depend upon the stance taken by the TDWR regarding their regulatory status; i.e., whether it is classed as Class I or Class II under the TDWR regulations. If it is considered Class I, it will have to be disposed of at a Hazardous Waste Disposal Facility. If it is Class II, it may be disposed of at a landfill, provided that the landfill meets requirements of the Texas Department of Health. At Lincoln's request, Radian will coordinate with the TDWR to determine the regulatory status of the soil and, if appropriate, design and execute a soil sampling and analysis plan for determining the regulatory status.

The potentially contaminated soil remaining in the excavation well should be addressed in the same manner as the soil in the warehouse. Much of the soil yet to be excavated is very likely not contaminated and will not have to be disposed of as waste at all. The problem, then, is to define what is contaminated and what is not. At Lincoln's request, Radian will coordinate with the TDWR and define and implement a procedure for determining what must be dealt with as a regulated material.

Soil Sampling and Monitor Wells

As discussed previously, Radian recommends that a comprehensive program of investigation be undertaken in the area to the north, northwest, and west of the pit to define the magnitude and extent of the occurrence of the oily liquid material. Per your instructions at the 16 July meeting, Radian is preparing a plan for the number, location, depth, and other specifications for several coreholes and monitor wells in the subject area. It is understood that access may be limited on property of adjoining landowners where such wells and coreholes may be placed.

Summary

In general, we recommend a cautious approach in dealing with the potentially contaminated liquids and soils at the 100 Congress Avenue site. Our recommendations to date in dealing with the liquids and soils at the site have been based on data as it came back from our chemical labs and on best engineering judgement, considering what might reasonably be expected in situations like this; i.e., an unknown oily material occurring in the subsurface in an urban environment. Such material usually turns out to be

naturally occurring material, such as crude oil, or petroleum based material like fuels (gasoline, diesel, etc.), waste oil, or spent solvents.

The fact that we now know that we are apparently dealing with a highly unusual situation, a coal gasification plant that was closed over 50 years ago, dictates that a high degree of caution be exercised in dealing with soil and water from the site. Organic liquids derived from coal tar contain many compounds which have both acute and chronic toxicological properties and are potentially carcinogenic.

We at Radian look forward to continuing our support of Lincoln on this project. Please call me or Will if you have any questions. I expect that Robert Wallace will return on 22 July and resume his duties as Technical Project Director.

Sincerely,

Thomas W. Grimshaw, Ph.D.
Program Manager

TWG:dc

RADIAN

229-025

16 August 1985

Mr. Kevin Fleming
Lincoln Property Company
600 Congress Avenue, Suite 2180
Austin, Texas 78701

SUBJECT: Status Summary and Current Recommendations

Dear Kevin:

This letter is to summarize our recent activities at the 100 Congress Avenue site and to present certain recommendations for future activities at the site. The discussion of our recent activities is divided into the following general areas:

- o Evaluation of Disposal Options
- o Geotechnical Investigations
- o Water Level Investigations
- o Isolation of 100 Congress Avenue Foundation

A discussion of likely future activities is then provided.

I. SUMMARY OF RECENT ACTIVITIES

Evaluation of Disposal Options for Contaminated Fluids and Soils

Based on the outcome of a series of meetings and discussions with TDWR and TDH officials, Radian collected samples of the contaminated fluids and soils from the 100 Congress Avenue excavation and analyzed them for the RCRA characteristics (ignitability, toxicity, corrosivity, and reactivity) in order to determine the regulatory classification of these materials and to assist in the evaluation of disposal options. Although the results of the sample analysis revealed that neither the soils nor the waters from the site exhibited properties which would make them hazardous under the existing regulations, these materials were known to contain concentrations of hazardous constituents (i.e., benzene, toluene, PNAs, etc.) from which potential liabilities could result if the materials were improperly handled or disposed. Therefore, a number of options were considered for the contaminated soils and fluids produced at the site.

For the contaminated fluids which could no longer be sent to a TRC regulated (Class II) disposal well, Radian assisted in the arrangements and negotiations with transportation and disposal companies that enabled the temporary disposal of these fluids to an injection well in Texas City. The fluids were shipped and disposed of as non-hazardous waste into a Class I disposal well until other arrangements could be made. A number of both short- and long-term alternatives to the Class I well disposal were considered

including treatment and discharge to storm sewers, pretreatment and discharge to sanitary sewer, interception, treatment and reinjection to groundwater, other classes of injection wells, and temporary containment of inflowing ground water by means of a grout wall. A grout wall to temporarily stop or reduce the influent to the excavation pit was installed which significantly reduced the inflow to the pit. Radian pursued other options in the event that fluids could not be permanently stopped. This included drafting a letter to TRC requesting to reconsidering their position on disposal of the fluids to a Class II well in Giddings, and drafting a letter to the City of Austin, Water and Wastewater Utility, requesting permission to discharge the fluids under their industrial pretreatment regulations, to the City's sanitary sewer system. At this writing, the TRC has turned down the request for permission to go to a Class II disposal well. City of Austin officials are currently considering the request for discharge to sanitary sewers.

Radian evaluated a number of options for disposal of the potentially contaminated (but non-hazardous) soils from the 100 Congress Avenue site. Approximately 2000 cubic yards of these soils were removed from the pit and temporarily stored in the adjacent warehouse on-site. After Radian visited the site proposed by the excavation contractor, Radian met with Lincoln to discuss a range of disposal/treatment alternatives for these soils. Table 1 shows the different alternatives considered and summarizes the technical and economic trade-offs which these alternatives posed. Based on potential liability considerations, and on discussions held with TDH officials, Lincoln entered into negotiations with two local commercial/municipal landfills for accepting these contaminated soils.

Also Radian recommended that samples be taken of all trucks leaving the site with "clean" shale rock or uncontaminated soils in order to provide a basis for disposal of these materials to a construction landfill.

Geotechnical Investigations

Following a records search of the materials collected by the consulting archaeologist, Hank Montoure, and the staff report of the Radian team on coal gasifiers, we decided to drill testholes around and beneath the warehouse. The geotechnical investigation involved two phases. Test holes were drilled along the side of the warehouse to define the extent of the contaminated groundwater. A total of 10 test holes were placed around the perimeter of the warehouse. During the drilling, the cuttings were logged by the Radian hydrogeologist. The results of the test holes indicated that the contamination extended on all sides of the warehouse. Water levels were also noted and logged to begin the process of determining the direction of groundwater flow. The formal determination of the flow system will be done with the data gathered from the piezometers and monitoring wells.

The other activity in the Geotechnical work included drilling beneath the floor of the warehouse to identify the existence of any waste materials. The test holes were located based on an interpretation of the historical materials by the Radian hydrogeologist. The first test hole encountered tar-like material about four feet beneath the floor of the warehouse. This material is considered to be one of the sources of the contamination in the groundwater

Table 1: Evaluation of Disposal Options for Contaminated Soils from the 100 Congress Avenue Site

- Alternative 1: Land Disposal

Type of Facility	Agency	Regulatory Requirements for this Type of Facility	Cost
Hazardous Waste Landfill (Class I)	TDWR	Stringent (High)	High
Municipal/Commercial Landfill	TDH	Low to Moderate	Low (if Available)
Industrial Landfill (Class II/III)	TDWR	Moderate	Moderate (if Available)
Construction Landfill	TDWR	Low	Low

- Alternative 2: Treatment

Type	Agency	Regulatory Requirements	Cost
Incinerator	TDWR/EPA	Stringent (High)	High
Chemical/Physical	TDWR/EPA	Moderate	High to Moderate
Biological	TDWR/EPA	Moderate	Moderate to Low

flowing into the site at 100 Congress. Test holes were drilled on five foot centers in the northeast corner of the warehouse. The spacing of the test holes permits an accurate definition of the waste body extent. Samples were collected and the cuttings logged by the Radian hydrogeologist as the drilling proceeded. The test hole represents the first phase the in the investigation of the extent of the waste body. Further test holes will be necessary to completely define the waste body which underlies the warehouse. The test holes will be the most accurate and efficient method to provide data for the second phase of construction planned by Lincoln Property Company on the adjoining site.

The results of the test drilling program beneath the warehouse indicates the presence of at least one waste body which contains tar and tar soaked soil. The waste is located below the northeast corner of the warehouse at about four feet below the existing floor. The thickness of the waste varies from four to seven feet. It is likely that this does not represent the main body of waste below the site. Further test drilling will probably encounter other waste disposal areas below the warehouse.

Water Level Investigations

There are no previous records for the water levels and the groundwater in the area around the 100 Congress site. The lack of records requires that wells be installed to develop a data base for the planning for the next phase of groundwater management.

On August 3, Radian began to install a field of 10 piezometers around the 100 Congress site. The holes were drilled by Younger Drilling as subcontractors to Maxim Engineers, Austin. Although the drilling contractor was not a regular water well and environmental drilling contractor, they were used since Maxim already has a contract in place with Lincoln Property Company. Radian provided the technical supervision for the installation. The piezometers were installed on August 3 and 4.

The piezometers consisted of simple standpipe type wells constructed of schedule 40 PVC pipe. The diameter of the pipe was 2 inches and was used in 20 foot sections which were glued using double couples to construct the correct length of well. The bottom 4 feet of the pipe was slotted by hand using a standard hacksaw to cut slots about 1 inch long spaced every 1/2 inch. The bottom of the well was capped using a schedule 40 PVC end cap glued onto the pipe. The wells were installed through 8 inch hollow-stem augers which had been drilled down to the target depths for the well.

The well bores were drilled down to the contact between the overlying Colorado Alluvium and the underlying Eagle Ford Shale or the Austin Limestone.

The wells were extended about 1 foot into the underlying shale in order to achieve an exposure of the slotted interval of the wells across the saturated zone of the alluvial material. This saturated zone of the local aquifer extends from the top of the shale upward for about 3 feet at the present time. Evidence from cuttings obtained during the drilling indicated that the saturated zone is much thicker during wetter periods of the year.

The residual staining of the shallower sediments by both the ground water and the tar or oil is evident as high as 10 feet above the shale/gravel contact.

All of the piezometers installed to date are in the sidewalk around the west and south sides of the warehouse and across 2nd street to the northwest. Three wells were installed along the west side of the warehouse and two along the south side of the warehouse. The sixth well is installed on the south side of the former Tips Hardware building.

Following placement of the piezometers through the hollow-stem augers, washed coarse sand was placed through the augers to a depth of one foot above the top of the slotted interval. The sand interval was then sealed with 1.5 feet of granulated bentonite well seal (Benseal brand). The well bore was then backfilled with soil excavated during the drilling process.

There are four remaining piezometers to be installed. These wells will be installed when Maxim Engineers secures the permits necessary for the drilling to be conducted in the city streets. Currently, Doyle Smith is attempting to secure the permits. Following the installation of the remaining piezometers, Radian will begin monitoring the water levels in the area around 100 Congress. The data collected will be used to design the monitoring wells which will be installed for long term service to provide both samples and the potential for use as extraction wells in a groundwater system. This system will be used to extract contaminants from the groundwater as a part of the design to clean up the area around the 100 Congress site. When the clean-up is undertaken, the construction of the companion building by Lincoln Property Company will be facilitated. Figure 1 presents a generalized location map of area surrounding the 100 Congress Avenue site which illustrates the spatial relationship between the waste body and the existing and proposed piezometer and monitoring well network. This figure presents an ideal coverage of the area; it is possible that not all of these wells will be able to be installed due to problems associated with permitting, utilities, and land owner permission.

The monitor well installation, as approved, should proceed as soon as possible in order to create the network of monitors before the fall rainy season descends upon Austin. There should be at least 10 monitor wells installed in locations to be decided upon following the initial results from the water level investigations. The monitor wells should ideally be placed farther away from the site so that they will be permanent installations not affected by future development. Radian has already developed the design for the monitor wells and the installation will proceed as soon as Lincoln Property Company authorizes the program.

Following the installation of the piezometers, Radian will issue a letter report to Lincoln Property Company detailing the installation of the wells and the plan for conducting the water level monitoring. The report will include both the data from the water level measurements and the interpretation of the data as it applies to the groundwater system. The data will allow the determination of the most efficient method for planning how to handle the dewatering needs for the continuation of the 100 Congress site construction and the start of the adjacent building.

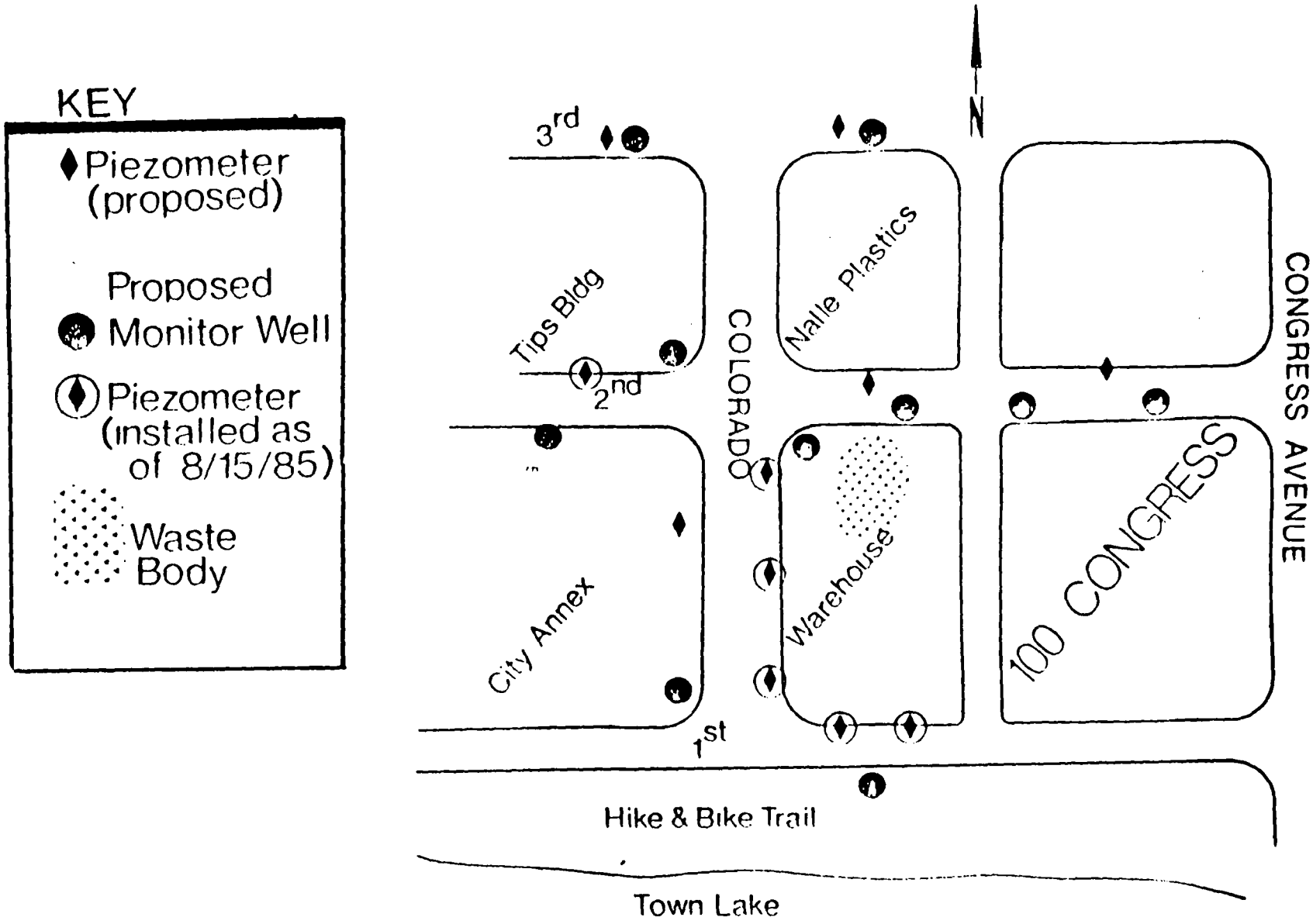


Figure 1 - Location of Proposed Monitoring Wells

Isolation of 100 Congress Foundation

As part of the ongoing investigation, Radian has been addressing the technical question of what type of material is best suited for the isolation of the building from the contaminated groundwater. Radian cherists have studied the chemical results from the water analysis to characterize the waste which may interact with the walls of the building at 100 Congress. After technical investigation, Radian recommended a containment barrier be applied to the walls of the building. Elimination of the vapors within the garage structure is not possible if the contaminated water is allowed to contact the walls without some kind of containment barrier. The method which Radian recommends consists of an inert type of liner material.

Following this decision Radian contacted several companies who manufacture materials of this type. On August 13, Robert Wallace and Will Boettner of Radian met with Kevin Fleming of Lincoln Property Company and Joe Dowdy and Bill Broom of Manhattan Construction to discuss with representative of two such companies their products. The representatives were Jack Moreland of MPC Containment Systems, LTD and Michael Mathieson of Gundle Lining Systems, Inc. Moreland from MPC presented data on his company's product known at HYTREL. The HYTREL material consists of polyester elastomer geotextile. The material discussed by Mathieson from Gundle is known as GUNDLINE HD and consists of a high density polyethylene.

Following the presentations, Kevin Fleming of Lincoln Property Company instructed both representatives to prepare cost estimates by Friday, August 16, 1985. The initial feeling of the Manhattan Construction people, Radian and Kevin Fleming was that the method of choice would be the GUNDLINE HD if the cost was not prohibitive. The HD offers greater durability for installation against the rough wall rock face. The proposed installation of the wall covers will be supervised by Manhattan Construction.

II. RECOMMENDED FUTURE ACTIVITIES

The following series of discussions provides an outline of future activities which appear to us to be reasonable next steps in the process of resolving the problems discovered during the 100 Congress Avenue construction. Although these activities would certainly be required in connection with your Phase II construction activities, we see them as independent steps necessary to forestall involvement by regulatory agencies in the clean-up of this problem.

Waste Body Removal

It seems reasonable to us that removal/isolation of the waste body should be considered as a priority item since it may still be contributing to the groundwater contamination. It is likely that removal/isolation of waste material would take place in two stages. First, removal of the major waste body itself, followed at a later date by removal of contaminated soil in conjunction with the foundation excavation for Phase II.

Radian recommends that further test holes be drilled beneath the floor of the warehouse. These holes will provide information necessary to develop the excavation and disposal plans for the materials which may be encountered below the warehouse site. Accurate information will permit the plans for the handling of the waste materials to be drawn to the best advantage of Lincoln Property Company. During the second phase of the drilling, the waste should be sampled and analyzed. The characterization of the waste is necessary to address the options for disposal. Following the waste characterization, the regulatory questions and the disposal methods may be addressed.

Radian will design of the methods and techniques to be used during the excavation of the waste body beneath the warehouse. Based on the data collected during the previously described test drilling program, Radian will prepare a plan for the disposal of the materials which are not normal construction debris. Radian will address the regulatory and technical problems which may be encountered when the waste bodies are excavated. Associated with the design of the removal excavation are additional sampling and analysis data needs.

Presently there are some 300 cases of jars which contain soil that is currently being sampled by the Maxim Engineers technicians as it is loaded into the trucks for haulage from the site. These should be tested in a systematic manner which will generate an analytical data base for establishing the quality of the materials as they are disposed into the landfill.

Radian recommends that a small percentage of the archived samples be tested to ensure that an adequate amount of data is acquired to protect the interests of Lincoln Property Company. The samples to be tested should be selected randomly to achieve a statistically significant sample of the material.

Continued sample collection should be maintained for the shale and limestone excavation materials which are potentially exposed to contaminants but are not visibly contaminated. These materials will present the difficulty of determining whether or not they have become contaminated. Because the volume of this material will be large, it is important to determine accurately which material can be disposed of in normal fashion and which must be disposed of in the more expensive manner. The periodic sampling and testing of the material is the method to assure that the amount of material that must be sent to the more expensive landfills is kept to the minimum.

Geohydrologic Investigation

During the second phase of the construction it will be necessary to continue the investigation into the behavior of the groundwater system in the area beneath the 100 Congress site. The program will include the following:

- Installation of additional monitoring wells
- Collection of water level data from both the monitoring wells and the piezometers installed during the Phase I investigation
- Collection of water samples from the monitoring wells to aid in the characterization of the contamination

o Development of a flow model to simulate the groundwater system

The monitoring wells will be constructed and installed at locations determined from data collected from the piezometers put in during the Phase I study. The monitoring wells will be designed to allow the collection of water samples which represent the state of the groundwater in the subsurface before exposure to outside conditions. The construction of the wells will include stainless steel screens emplaced across the shale/alluvium interval to collect the water that is flowing along the interface between the two formations. The stainless steel screens will allow the complete chemical composition to be analyzed.

Concurrent with the construction of the monitoring wells, a program of water level measurements will be conducted. The water level measurements will be taken at intervals of one week at first, changing to monthly, as conditions warrant. The water level data will be incorporated into a flow model for the groundwater system. The flow model will be a valuable tool for the planning of the clean-up of the contaminated water.

The water samples collected from the monitoring wells will be used to develop disposal plans and options. Samples collected previously during the Phase I study did not yield a full and accurate chemical composition because they had been exposed to the effects of sunlight and heat. The exposure of the material drives off an important percentage of the compounds which are expected to occur in wastes from coal tars. The disposal plans will need to be predicated on the full analysis of the waste materials.

Risk Assessment

Once the technical facts concerning wastes and constituent migration at the site have been collected, the next step is to assess the existing and potential impacts of the site and decide whether some sort of remedial action is required. This process is commonly referred to as "risk assessment", although this term incorporates a number of distinct elements. First, true risk assessment, which is the use of facts to define existing or potential impacts, should be distinguished from risk management, which is the process of weighing alternatives and making decisions based on input from the risk assessment as well as other social, economic and political factors. Second, various types of risks need to be assessed. The term "risk assessment" usually refers to defining the potential health and/or environmental effects of exposures to hazardous materials or situations. However, risks posed by potential regulatory and legal liabilities should also be considered.

Assessing potential health and environmental effects involves several steps. The critical steps for this site will be exposure assessment (i.e., determining the extent of human exposure to potentially hazardous constituents before or after application of remedial measures) and risk characterizations (i.e., describing the nature and magnitude of human risks).

Exposures are determined primarily from site monitoring data, often supplemented by the results of modeling the environmental fate and transport

of constituents of concern. Modeling is most often applied for groundwater transport, although surface water and air modeling may also be applicable.

Exposure assessments require determining the characteristics of the exposed population(s) (e.g., location, size, age) and the exposure (e.g., concentration, duration, temporal variations). With this information, the resulting risks can be characterized. Most toxic effects exhibit threshold levels below which no adverse effects are observed. Established standards and criteria for this type of toxicant usually reflect the threshold level. For carcinogenic agents, however, current regulatory policy holds that there is no threshold level and any dose in theory results in some risk. In this case, establishing "safe" exposures is a matter of defining acceptable risks. This can be very important in assessing a site because of the very low exposures that are often of concern and the resulting implications for remedial actions.

Kevin, this kind of analysis may seem somewhat exotic, but it is very important that a sound technical basis exists for making decisions regarding the requirement for, and the sufficiency of, remedial actions at the site.

Evaluation of Alternatives

If remedial actions are required, there are a number of alternatives available. These include no action, contaminant removal and disposal, site capping, encapsulating or containing contaminants, groundwater gradient controls, and in situ treatment by biodegradation or chemical fixation.

Typically, several likely alternatives are chosen for a more detailed analysis of the technical and economic feasibility and the most cost-effective alternative selected. Once a remedy (if required) is selected, then incorporation of this remedy into the construction plans for the Phase II building will be probably the most cost effective method of completing the remedial action. However, if necessary, the design and construction activity for the appropriate remedy could be accomplished separately. The best overall approach would be to integrate the two activities in such a manner that both needs (design and construction of Phase II and resolution of the clean-up problem) are met at the same time.

Please do not hesitate to call me if you have any questions about this letter.

Sincerely,

Robert C. Wallace
Project Director

RCW:dc

Enclosures

5141

LINCOLN PROPERTY COMPANY

February 7, 1986

Jim Thompson
City of Austin
Director, Water & Wastewater
1524 S. IH 35
Austin, Texas 78704

Re: 100 Congress

Dear Jim:

Enclosed is a package of information regarding the proposed treatment facility for the contaminated water. Additionally, I have enclosed test reports from Radian which indicate tests before treatment and theoretical results after treatment. Once we have new testing completed, we will forward copies of the test reports to you for review.

Please call if you have any questions or comments.

Thank you.

Sincerely,

LINCOLN PROPERTY COMPANY

Kevin A. Fleming
Construction Manager

KAF:sd

enclosures

LINCOLN PROPERTY COMPANY

February 7, 1986

Ron Bond
Deputy Director
Water & Wastewater Treatment
City of Austin
1524 S. IH 35
Austin, Texas 78704

Re: 100 Congress

Dear Ron:

Enclosed is a package of information regarding the proposed treatment facility for the contaminated water. Additionally, I have enclosed test reports from Radian which indicate tests before treatment and theoretical results after treatment. Once we have new testing completed, we will forward copies of the test reports to you for review.

Please call if you have any questions or comments.

Thank you.

Sincerely,

LINCOLN PROPERTY COMPANY

Kevin A. Fleming
Construction Manager

KAF:sd

enclosures

City of Austin

Founded by Congress, Republic of Texas, 1839
Municipal Building, Eighth at Colorado, P.O. Box 1088, Austin, Texas 78767, Telephone 512/477-6541

September 23, 1985

Mr. Kevin A. Fleming
Lincoln Property Company
600 Congress Avenue, Suite 2180
Austin, Texas 78701

Re: Request to Discharge Drainage Fluids

Dear Mr. Fleming:

In response to your request to discharge drainage fluids from the Lincoln Property construction site at 100 Congress Avenue, the Utility cannot accept these fluids to any of its treatment facilities at this time.

Any fluids discharged to Austin's sanitary storm sewer systems must meet certain quality standards. From the information you provided in your letter requesting permission to discharge fluids from the excavation site at First Street and Congress Avenue into the sanitary sewer system, such a discharge would not be allowed without extensive pre-treatment.

The level of treatment required may treat the fluid to a level acceptable for storm sewer discharge. Since the Water and Wastewater Utility is currently experiencing capacity limitations at all three (3) of its treatment facilities, I suggest that you work closely with Mr. Fred Rogers, whom you have previously contacted, to obtain a permit for storm sewer disposal of these fluids.

My staff will be happy to answer any questions you may have concerning existing treatment technology for these type fluids. If you wish any of this information, please contact Mr. Jack Gatlin, Supervisor, Industrial Waste Control, at 926-0316.

Sincerely,

James E. Thompson, P.E., Director
Water and Wastewater Utility

JET:JHG:src

cc: Andrew P. Covar
J. Chris Lippe
J. H. Gatlin

LINCOLN PROPERTY COMPANY

August 5, 1985

Mr. Jan Thompson
Director, Water and Wastewater Utility
City of Austin
P.O. Box 1088
Austin, Texas 78767

Dear Mr. Thompson:

The purpose of this letter is to request permission to discharge fluids meeting requirements placed by your department to the sanitary sewer of The City of Austin. The source of these fluids appears to be the past disposal practices of the Austin Gas Works, a facility which operated a coal gasification plant to provide fuel for gas lighting of city streets, at the corner of Colorado and West 2nd Street from 1877 to 1928. The principal contaminant present in these fluids is a hydrocarbon-like material most likely derived from coal tar produced as a waste of byproduct of the gasification process.

During the excavation of the 200 Congress Avenue site, we encountered the contaminated fluid at the approximate depth of 50-55 feet. Immediately upon the initial encounter of such fluid, we hired Radian Corporation, environmental engineers with expertise in the area of testing and identifying fluids of this type. Included as attachments to this letter are the results of Radian's chemical analysis of the fluids and soils encountered at the site. These results indicate that the fluids contain concentrations in the part per million range of aromatic organic compounds which are typically found in coal tar. However, Radian's tests indicate that the fluids and soils fail to exhibit properties which would make them hazardous under the Resource Conservation and Recovery Act (RCRA) regulations. Also included as attachments to this letter are various background documents and meeting notes from discussions held with officials at the Texas Railroad Commission, the Texas Water Commission (formerly TDH), the Texas Department of Health, the EPA, and the City County Health Department concerning the fluids and soils and the alternatives for disposing of same. These materials were discussed informally with members of your staff at the site on 5 August 1985.

Currently, we are experiencing a flow of these fluids into our excavation pit at a rate of between 10,000 and 20,000 per day. On a temporary basis, and out of an abundance of cost caution pending the results of the RCRA tests, we have been disposing of these fluids by trucking them to Texas City via Malone Trucking Company. The cost of this trucking procedure is prohibitive and we feel no longer necessary since the results of the RCRA tests indicate that the fluids and soils fail to exhibit properties which would make them hazardous under the RCRA regulations. In a further effort to prevent or limit the fluids from entering the excavation pit, we are in the process of installing an injected grout wall to prevent the fluids from entering the pit. Nevertheless, it still may be necessary to install interceptor wells to decrease the pressure on the grout wall and collection and disposal of these fluids at the rates listed above or higher may be necessary at some time in the future.

In addition to the 100 Congress Avenue building, our tentative plans call for the construction of Phase II, a nineteen story office building on the adjacent site where it is believed the actual source of these fluids originate. Preliminary geotechnical investigations have revealed a 20 x 50 foot subsurface pit approximately 8-12 feet deep containing coal-tar waste materials. Below this pit and extending a block or more in some directions, are the hydrocarbon contaminated fluids. Precise determinations of the extent of this contamination are hampered by the density of buildings and subsurface utilities in this area which interfere with geotechnical investigations. However, it appears that the contamination may extend under both City streets and adjacent property in the vicinity of 2nd and Colorado. These investigations are continuing and we will keep you informed as to their progress.

In regard to the discharge of these fluids into the sanitary sewer system, we are certainly willing to comply with pretreatment requirements. Additionally, we can control the timing of discharges to avoid the daily peak influent at your wastewater treatment system. Finally, we would be willing to discuss any other alternatives which you recommend. The 100 Congress Avenue building was originally permitted for 21 LUE's and if Phase II is similarly permitted, these permit estimates roughly correspond to the maximum expected discharge of these fluids. Our expectation is that this problem is temporary and would be resolved before occupancy in mid to late 1987. Robert Wallace of Radian has contacted Fred Rogers of the City County Health Department and indicated that more information is required

City/County Health Department and indicated that more information is required prior to ther making a decision on whether discharge of the fluids, after treatment would be permitted into the storm drainage syster.

Our view of these fluids is that they are untreated wastewater from a historically operated facility which provided gas lighting to the City of Austin early in this century. Since the results of the RCRA tests indicate that the fluids are not hazardous under the RCRA regulations and since we are taking the lead in helping clean up a proble which we did not create, we feel that we should be allowed to dispose of the fluids in the sanitary sewer syster as long as such disposal does not unnecessarily burden the syster. As stated above, we are willing to comply with whatever reasonable requirement you may impose with regard to such disposal.

If there are any questions concerning this information, any additional data requirements, or the need for further discussions, please do not hesitate to ask, for we are interested in the expeditious resolution of this proble.

Sincerely,

LINCOLN PROPERTY COMPANY

Kevin A. Fleming
Construction

KAF:sd
enclosures

EPA

ACKNOWLEDGEMENT OF NOTIFICATION OF HAZARDOUS WASTE ACTIVITY

This is to acknowledge that you have filed a Notification of Hazardous Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act *(RCRA)*. Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA I.D. NUMBER ➤ TXD 98 105 8209

LINCOLN PROPERTY COMPANY
600 CONGRESS AVENUE SUITE 2180
AUSTIN, TX. 78701

INSTALLATION ADDRESS ➤ 100 CONGRESS AVENUE
AUSTIN, TX. 78701

EPA Form 8700-12A (4-80)

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION

1124 S IH 35 | CAPITOL STATION – P O DRAWER 12967 | AUSTIN TEXAS 78711-296

August 7, 1985

Kevin A. Fleming
Lincoln Property Company
600 Congress Avenue, Suite 2180
Austin, Texas 78701

Re: Coal Gasification Waste

Dear Mr. Fleming:

We have received your request to inject oily waste from your construction site at 100 Congress Avenue into a Railroad Commission permitted disposal well. You indicate the waste is a waste or by-product from a coal gasification process. Disposal wells subject to Railroad Commission jurisdiction are permitted to dispose of wastes generated from activities associated with oil and gas exploration, development, and production. Since your waste is not an "oil and gas waste," it may not be injected into a Railroad Commission permitted disposal well.

Sincerely yours,

William H. Barnes

William H. Barnes, Legal Counsel
Underground Injection Control

WHB/jcb

LINCOLN PROPERTY COMPANY

July 30, 1985

Mr. Richard Cinn
Technical Support Chief
Underground Injection Control Section
Texas Railroad Commission
P.O. box 12967
Austin, Texas 78711

Dear Mr. Cinn:

This letter is to request assistance from the Texas Railroad Commission (TRC) in the expeditious resolution of the disposition of liquids produced during dewatering activities at the 111 Congress Avenue construction site. From earlier telephone conversations, meetings, and correspondence between you and Mr. Robert Wallace at Radian Corporation, our environmental consultant, we have attempted to keep you informed of the progress on the hydrocarbon contamination problem at the construction site.

To summarize, as preliminary laboratory results were coming in, we believed the hydrocarbon contaminant to be derived from crude oil sources. There were reports of an abandoned oil well in the vicinity. Based on this information and your verbal concurrence, arrangements were made to dispose of the contaminated water into a TRC approved brine injection well located near Giddings, Texas.

Additional analytical results received from the laboratory on July 11, 1985 caused us to question our original belief that the material was crude oil derived. Also from several sources we learned of the historical location of a coal gasification "town gas" plant (TGP-site) in the vicinity of the 111 Congress Avenue site.

It appears that the hydrocarbon material is most likely derived from coal tar produced as a waste or by product of the gasification process. After we received this conclusion, transportation of the contaminated water to the TRC approved well was halted. Water was stored temporarily on-site and early this past week, arrangements were completed that enabled transport and disposal of these fluids to a Class I disposal well in Texas City. Also, we performed some additional analyses of the fluids for RCRA characteristics: ignitability, toxicity, corrosivity, and reactivity, and determined that the fluids were non-hazardous under RCRA. Meetings were held with TDWR and TRC, and it was decided that TRC was the lead agency. Discussions with TRC officials revealed that they would have no objection to disposal of these fluids to either a Class II or Class III injection well.

At the present time, we are experiencing a decrease in the flow of fluids into our excavation and we are installing a grout wall to prevent the

fluids from entering the pit. Nevertheless, it still may be necessary to install interceptor wells to decrease the pressure on the wall and disposal of these fluids for a relatively short time may be necessary. Therefore, we are requesting permission to dispose of these fluids to a Class II injection well approved by TNC. We believe the fluids are in many ways similar to those currently being disposed of by Class II wells and of all the disposal alternatives available at the moment, this method seems to be the most practical and the most environmentally sound.

Attachments to this letter include various background documents and additional analytical data results. If there are additional data requirements, please do not hesitate to ask, for we are interested in expeditious resolution of this problem.

Sincerely,

LINCOLN PROPERTY COMPANY

Kevin A. Fleming
Construction

KF:sd
enclosures

cc: Leonard Mehrmann, PhD, CPG
Surveillance and Enforcement Division
Bureau of Solid Waste Management
Texas Department of Health
1100 W. 49th Street
Austin, Texas 78756-3199

Southwest OCCUPATIONAL HEALTH SERVICES, INC.

TECHNICAL RESOURCE CENTER
304 MAGNOLIA BLVD., MAGNOLIA, TX 77355
(713) 356-6035

August 26, 1985

Mr. Kevin Fleming
Lincoln Property Company
600 Congress Avenue
Suite 2180
Austin, TX 78701

Dear Kevin,

Enclosed is the report on the Industrial Hygiene survey performed by Southwest Occupational Health Services, Inc. at the 100 Congress Avenue Construction Site in Austin, Texas, on July 17-18, 1985. My findings and recommendations are included in the report. If we may be of any further assistance, please do not hesitate to contact us.

Sincerely,

Claren

Claren J. Kotrla
Vice-President

Enclosure

pb

Southwest OCCUPATIONAL HEALTH SERVICES, INC.

TECHNICAL RESOURCE CENTER
304 MAGNOLIA BLVD., MAGNOLIA TX 77355
(713) 356-6038

Report of
INDUSTRIAL HYGIENE SURVEY
100 CONGRESS AVE.
LINCOLN PROPERTY COMPANY
CONSTRUCTION SITE

Claren J. Kotrla
CIH #1930
August 26, 1985

REPORT OF
INDUSTRIAL HYGIENE SURVEY
1000 CONGRESS AVE.
LINCOLN PROPERTY COMPANY

SUMMARY

An Industrial Hygiene survey was conducted at the Lincoln Property construction site at 100 Congress Ave. on July 17 and 18, 1985. Twenty-five (25) samples were collected. The results were all below acceptable exposure levels. None of the results were above the OSHA Permissible Exposure Levels in the working environment.

INTRODUCTION

The survey was made to evaluate and document ambient airborne concentrations of representative hydrocarbons. The focus of this industrial hygiene air monitoring activity was to estimate the health risk to the exposed work force, and to aid in minimizing future liabilities to all parties involved.

There are certain conditions necessary prior to significant airborne exposure. These are:

1. There must be an undetected escape of hydrocarbons into the air.
2. The volume and concentration of the escape must be sufficient to cause concentrations to radiate from the escape point.
3. There must be little or no wind for dispersion.
4. People must be within the area and make no attempt to protect themselves.

This survey evaluated the volume and concentration of representative hydrocarbons (benzene & ethyl benzene) to see if they approached or exceeded the concentrations as set forth by the OSHA Standards. (See Table 1)

The work assignments of construction personnel at this site are varied and complex. The assumption was made that people would be in the areas monitored at one time or other and, because of their assignments, would make no effort to escape nor would they wear protective equipment.

METHODOLOGY

The areas where airborne concentration of hydrocarbons may have been present were selected to be sampled. Areas where personnel would be likely to work were also selected. It was noted that the construction offices were under positive pressure and that the warehouse where the soil suspected of contamination was stored was well ventilated.

The sample system used for the survey was a diffusion sampler. Specifically, SKC personal monitors using the 530 series organic vapor dosimeter badge were used. These units are small passive dosimeters which do not require the use of sampling pumps allowing easier placement on personnel and in areas of interest.

METHODOLOGY CONT.

Time-weighted averages (TWA) for the samples were calculated as follows:

$$\text{TWA(in mg/m}^3\text{)} = \frac{\text{actual weight of contaminant on sorbent (nanograms)}}{\text{sampling rate S (cc/min) x sampling time T (min)}}$$

These values were converted to parts per million (ppm) as follows:

$$\text{Concentration(ppm)} = \text{concentration(mg/m}^3\text{)} \times \frac{T(^{o}K)}{273} \times \frac{760}{P(\text{mmHg})} \times \frac{22.4}{MW}$$

Where:

mg/m^3 = milligrams per cubic meter
T = temperature
P = pressure
MW = molecular weight

When the samples were completed they were taken to Texas Research Institute, a Certified Industrial Hygiene laboratory, in Austin for analysis. The initial samples were desorbed and injected into a gas chromatograph to determine possible contaminant exposures. All peaks identifying hydrocarbons were low. The highest and potentially most harmful constitutents were then tested on the remaining samples (benzene & ethyl benzene). This approach was taken because the exposure had been characterized and additional analysis would have been costly without providing additional meaningful information.

The attached table summarizes the data obtained during the survey.

The attached table summarizes the data obtained in the survey.

TABLE 1
INDUSTRIAL HYGIENE SURVEY RESULTS
100 CONGRESS AVE.
CONSTRUCTION SITE

SAMPLE ID	LOCATION/ACTIVITY	ANALYSIS	RESULTS
L1	BLANK/CONTROL	BENZENE	ND
L2	WAREHOUSE,NIGHT	BENZENE	<0.1
L3	WAREHOUSE,NIGHT	BENZENE	<0.1
L4	WAREHOUSE,NIGHT	BENZENE	<0.1
L5	ABOVE COLUMN 4, NIGHT	BENZENE	<0.1
L6	COLUMN 4, ABOVE PIT	BENZENE	0.089
	COLUMN 4, ABOVE PIT	ETHYL BENZENE	0.18
L7	COLUMN 11, ALONG TRENCH(2ND STREET)	BENZENE	<0.04
	COLUMN 11, ALONG TRENCH(2ND STREET)	ETHYL BENZENE	0.14
L8	COLUMN 11, ALONG TRENCH	BENZENE	<0.1
L9	COLUMN 11, ALONG TRENCH	BENZENE	<0.1
L10	COLUMN 11, ALONG TRENCH	BENZENE	<0.1
L11	DON POLK, OPERATOR	BENZENE	<0.3
L12	VOID		N/A
L13	COLUMN 13, OVER SEEP		<0.1
L14	COLUMN 4, OVER SEEP		<0.1
L15	COLUMN 4, OVER SEEP		<0.1
L16	COLUMN 4, OVER SEEP		<0.2
L20	CHARLIE AMOS, LABORER		<0.2
L21	OFFICE ADJACENT TO WAREHOUSE		<0.2
L22	WAREHOUSE		<0.2
L23	WAREHOUSE		<0.2
L24	WAREHOUSE		<0.2
L25	WAREHOUSE		<0.2

*NOTE: SAMPLE NUMBERS 17, 18, AND 19 WERE NOT ASSIGNED.

DISCUSSIONS AND CONCLUSIONS

The breathing environment in the construction excavation, the offices and warehouse tested in this survey were all well below OSHA (Occupational Safety & Health Administration) standards. Most were approaching the lower limits of detectability. Therefore, under the conditions represented by the airborne tests ambient air in these areas should be present no significant exposures to employees or the general public.

During the survey the question of skin contact was discussed. The Manhattan employees and their subcontractors were advised to avoid skin contact with the liquid found in the excavation and wear protective boots and gloves. The type provided was neoprene rubber which is acceptable for the incidental contact expected by the employees. Those who might have had skin contact with the liquid were advised to wash with soap and water. This type of material can cause a burning sensation of the skin and with significant skin exposure over time can cause photo sensitization of the skin.

The following table identifies protective materials useful for various exposures.

PROTECTIVE CLOTHING MATERIAL SELECTION GUIDELINES
FOR VARIOUS PETROLEUM AND PETROCHEMICAL PRODUCTS*

Product	Clothing Material: Natural Rubber	Neoprene	Nitrile	Polyvinyl Chloride	Polyvinyl Alcohol	Viton
Benzene	NR	NR	NR	NR	R	HR
Gasoline	NR	R	HR	NR	HR	R
Hexane	NR	HR	HR	NR	HR	HR
Kerosene	NR	HR	HR	NR	HR	R
Mineral Spirits	NR	R	R	HR	--	--
Naphtha, VM&P	NR	R	HR	NR	HR	R
Toluene	NR	NR	NR	NR	R	HR
Xylenes	NR	NR	R	NR	HR	R

Notes: HR = Highly Recommended
R = Recommended
NR = Not Recommended

These are guidelines and not guarantees.

* Adapted from: Schwope, A.D., P.P. Costas, J.O. Jackson, and D.J. Weitzman, Guidelines for the Selection of Chemical Protective Clothing. American Conference of Governmental Industrial Hygienists, 6500 Glenway Ave. Bldg. D-5, Cincinnati, Ohio 45211 (1983).

RECOMMENDATIONS

Based upon the results and observation made during this survey, I recommend the following:

* Identify persons having significant skin contact with the liquid in the excavation.
* Continue use of neoprene protective gloves and boots for those who may come in contact with the liquid.
* Inform the employees of the results of this survey.
* Avoid skin contact with this liquid.

Southwest OCCUPATIONAL HEALTH SERVICES, INC.

304 MAGNOLIA BLVD
MAGNOLIA, TX 77355
(713) 356-6038

August 14, 1985

Kevin A. Fleming
Lincoln Property Company
600 Congress Avenue
Suite 2180
Austin, Texas 78701

Dear Kevin,

This is to confirm our earlier discussions about the industrial hygiene evaluation I made at the construction site for the 100 Congress Building. The airborne levels of hydrocarbons were very low and do not pose an inhalation health risk at these levels observed. However, skin contact, especially of prolonged periods, can pose a health problem in relation to photo sensitivities and increased risks of skin cancer stemming from the biologically active constituents of the coal tars and related hydrocarbons. The use of protective boots and gloves when working around these products reduces the skin contact risks.

If you need additional information, please don't hesitate to call.

Sincerely,

Claren Kotrla
Vice-President

pb

LINCOLN PROPERTY COMPANY

August 12, 1985

Mr. David Barker
Texas Department of Water Resources
Solid Waste & Spill Response Section
1700 North Congress
Austin, Texas 78711

Re: 100 Congress Building

Dear Mr. Barker:

This letter will summarize the results of the meeting that I attended in your office on July 18, 1985 in connection with the contaminated fluids and soils Lincoln Property Company has discovered during excavation of the building site at 100 Congress Avenue. Also attending the meeting were Dick Martin from your office, Tom Grimshaw, Will Boettner and Lynne Zimmerman with Radian Corporation and Steve Drenner, our attorney with Jenkins & Gilchrist.

At the meeting, I gave you a brief description of the project and the facts surrounding our discovery of the contaminated fluids. Radian explained in more detail the status of their chemical analysis of the fluid. Radian concluded that at that time their best guess was that the fluid was contaminated due to ground water coming in contact with a coal tar like substance. Radian's conclusion was based primarily on two separate sets of evidence. First, Radian's historical research indicated that a coal gassification plant was previously located on the site adjacent to the 100 Congress site. Coal tar was a by-product of the coal gassification process. Second, Radian's chemical analysis supported the proposition that the substance contaminating the fluid was coal tar. Radian and I described to you our short-term and long-term plans for dealing with the problem.

After Radian and I finished our presentation, you and Dick Martin indicated that you believed that the Texas Department of Health was the governmental agency in Texas which had jurisdiction over our situation. You and Dick indicated that since we were excavating for a project which was a "people-oriented project" (i.e. office usage) and not for industrial purposes, our problem fell under the jurisdiction of the Texas Department of Health. You further indicated that the Texas Department of Health would classify the waste as either "hazardous" or "non-hazardous". This classification would be made based on the results of a RCRA test. Finally, you indicated that if the fluid was classified as "hazardous" waste by the Department of Health, effective as of September 1, 1985, the Texas Department of Water Resources would have jurisdiction over our problem due to the reorganization of certain state agencies.

You mentioned that the State of Texas would be creating a fund in the future which potentially could help Lincoln Property Company pay for the costs of the necessary clean-up. This fund will be created pursuant to the terms of an amendment to the Solid Waste Act. However, you indicated that the fund was not in place at this time.

600 Congress Avenue Suite 2180 Austin, TX 78701 512 499-8811

Finally, Dick said that if the fluids are classified as "hazardous" by the Texas Department of Health, there was a possibility that after September 1, 1985, the Texas Department of Water Resources might declassify the fluid to a "Class II" classification.

If this summary does not accurately reflect our meeting of July 18, please let me know. We followed your advise and have been working with the Texas Department of Health with regard to our problem, and I would be glad to bring you up to date on the situation if you desire.

Yours truly,

LINCOLN PROPERTY COMPANY

Kevin Fleming

cc: Will Boettner

Texas Department of Health

Robert Bernstein, M.D., F.A.C.P.
Commissioner

1100 West 49th Street
Austin, Texas 78756-3199
(512) 458-7111

Robert A. MacLean, M.D.
Deputy Commissioner
Professional Services

Hermas L. Miller
Deputy Commissioner
Management and Administration

AUG 2 7 1985

Mr. Kevin Fleming
Lincoln Property Company
600 Congress Ave. Suite 2180
Austin, Texas 78701

Subject: Hazardous Waste - Travis County - TDH Reg. No. 66361
Lincoln Property Company

Dear Mr. Fleming:

On July 22, 1985, we received your initial hazardous waste notification (EPA Form 8700-12) indicating that you are a "small-quantity generator of hazardous waste." The Department has registered the subject facility and assigned the number 66361 as the facility's Texas Department of Health (TDH) Registration number. Please use this TDH Registration number on all Texas Uniform Hazardous Waste Manifests, reports and/or correspondence with TDH. We have forwarded your initial notification to the EPA regional office in Dallas.

In accordance with Subchapter L of the Department's "Municipal Solid Waste Management Regulations" (MSWMR) [excerpt enclosed], a generator is a "small-quantity" hazardous waste generator if in a calendar month he generates less than 1,000 kg of hazardous waste. A small-quantity generator may accumulate hazardous waste on site, provided that the amount of accumulated wastes does not exceed the 1,000 kg limit for hazardous waste or 1 kg limit of acute hazardous waste. If the accumulated waste amount exceeds the 1,000 kg limit, then all the accumulated waste becomes subject to full regulation under Subchapter L, "Generators" (Sections 325.293 through 325.299) and must be shipped off site within 90 days.

In addition, we wish to inform you that in accordance with Subsection 4(c) of the Texas "Solid Waste Disposal Act," Article 4477-7 (V.T.C.S.), small-quantity waste generators who offer hazardous waste for transport must: (1) provide record keeping concerning such transportation, and (2) manifest or adopt some other appropriate system (this could also be in the form of detailed records) to assure that all hazardous wastes shipped off site are transported to a processing, storage, or disposal facility that is permitted or otherwise authorized for that purpose.

To assist you in the proper handling of your hazardous waste, we are enclosing for your information the following:

1. An excerpt of the Texas Industrial Materials Recycling Directory: 1981, listing solvent recyclers.

2. A list of the industrial waste disposal sites in Texas.

3. An excerpt of the Department's MSWMR, Volume 1, defining how municipal sanitary landfills are required to handle industrial wastes, Section 325.135; special wastes, Section 325.136; and Class I industrial wastes, Section 325.137.

4. A list of Texas hazardous waste transporters registered with EPA.

5. A copy of the EPA "Uniform Hazardous Waste Manifest" that must be used to transport hazardous waste after September 30, 1984. Actual manifests may be obtained from the Department when required.

If you have any questions concerning this letter or if we may be of any assistance to you regarding solid waste management, you may contact Mr. Hans J. Mueller, P.E., here in Austin at telephone number (512) 458-7271 or you may prefer to contact Mr. Charles H. Wentworth, P.E., Regional Director of Environmental and Consumer Health Protection at P.O. Box 190, Temple, Texas 76501; telephone number (817) 778-6744.

Sincerely yours,

L. B. Griffith, Jr., P.E., Director
Surveillance and Enforcement Division
Bureau of Solid Waste Management

JCM:kv
Enclosures

cc: Region 6, TDH
Austin-Travis County Health Department

Texas Department of Health

Robert Bernstein, M.D., F.A.C.P.
Commissioner

1100 West 49th Street
Austin, Texas 78756
(512) 458-7111

Robert A. MacLean, M.D.
Deputy Commissioner
Professional Services

Hermas L. Miller
Deputy Commissioner
Management and Administration

AUG 6 1985

EXTRA

Texas Waste Systems, Inc.
c/o Mr. Kevin D. Yard, P.E.
Region Engineer
Waste Management, Inc.
7676 Hillmont, Suite 195
Houston, Texas 77040

Subject: Solid Waste - Travis County
Texas Waste Systems, Inc. - Permit No. 249
0.2 Mile N of US-290, W of Giles Road,
& 5.1 Miles E of US-290 & IH-35 Int.

Dear Mr. Yard:

This letter will confirm the telephone conversation between L. E. Mohrmann, Ph.D., C.P.C., of our staff, and Mr. Jim Hackfeld of Austin Community Disposal on July 29, 1985, concerning disposal of the contaminated soil from the construction site at 100 Congress Avenue in Austin, Texas.

Our staff has met with Mr. Kevin Fleming of Lincoln Property and members of the staff at Radian Corporation concerning the nature and amount of the contamination in the soil from the excavation site. The soil has been contaminated through contact with ground water which has been in contact with a coal tar-like material apparently buried on the site of an old coal gasification plant which generated illuminating gas between 1891 and 1920.

The Department has no objection to any Type I municipal solid waste site accepting this contaminated soil. Provided there is no odor problem with the contaminated soil, it may be used for daily cover material if appropriate for daily cover material. When the coal tar-like waste is excavated, it and the immediately surrounding soil must be buried below natural ground level and may not be used for intermediate cover material.

If you have any questions concerning this letter or if we may be of any assistance to you regarding solid waste management, you may contact Dr. Mohrmann here in Austin at telephone number (512) 458-7271 or you may prefer to contact Mr. Charles H. Wentworth, P.E., Regional Director of Environmental and Consumer Health Protection at P.O. Box 190, Temple, Texas 76501; telephone number (817) 778-6744.

Sincerely yours,

L. B. Griffith, Jr., P.E., Director
Surveillance and Enforcement Division
Bureau of Solid Waste Management

LEM:gsr

cc: Region 6, TDH
Austin-Travis County Health Department
Austin Community Disposal Company, Inc.
Mr. Kevin Fleming, Lincoln Property
Mr. Jim McCutchan, Radian Corporation

527

LINCOLN PROPERTY COMPANY

February 20, 1986

Mr. Bob Sylvus
Texas Water Commission
P.O. Box 17387
Austin, Texas 78711

Re: 100 Congress

Dear Mr. Sylvus:

In response to your suggestion to investigate alternatives in the disposition of the contaminated ground water at the project, there are several results. We contacted three companies which were interested in presenting various options for disposal. I have listed the three below with a description of the investigations.

Aqua & Associates

Primary contact is Harold Lanham at (512) 331-7707. This company has recently opened a non-discharge water treatment facility on Bee Cave Road between West Lake Hills and Bee Cave. They propose to dispose of our contaminated water for approximately one-half the cost that we are currently paying to Malone Trucking Company which transports the water to Texas City. They propose to have an on-site operator at the time when water is hauled there and injected into their system; monitor the water by various tests and then run the water through their system. The discharge from the system is into a pond and when the water in the pond reaches a certain level, it is discharged through an irrigation system to a buffer zone area.

Windermere Utilities

Primary contact is Clint Autrey at (512) 251-4141. This company currently operates a discharge water treatment facility in the Pflugerville area that has a permit from the State of Texas. They propose to dispose of our contaminated water for approximately one-half the cost we are currently paying. They prefer to have a test-load put into their system to see if there are any negative effects and if not, proceed with the disposal on an as required basis. A storage tank would be located at their treatment facility to hold the water until their system capacity allows it to be put into the system. The water would be tested by Windemere to ensure the quality of water incoming remains within limits which their facility can handle.

Cematco

Primary contact is Benjamin Jones at (512) 835-4861. This company has no operating water treatment facility but offers to design and build an on-site treatment facility to treat the water prior to pumping it into either the City of Austin is wastewater line or storm drainage system. This company is primarily one that is presented a situation and is charged with resolving it both environmentally and economically. Cematco offered to arrange transportation and disposition of the contaminated water in its present condition to a closer disposition location. This would reduce our current costs by approximately 10%.

We contacted other companies which were not in a position to help us in this situation. We are and will continue to pursue alternate methods of disposal to both reduce current disposition costs and find a permanent solution.

Based upon the information gathered, we hope at best to reduce the current costs for disposal by one-half which is still unnacceptable in that it is jeopardizing the financial stability of this project. The project is a viable one only if the total costs required for the project do not exceed the maximum loan amount. We are rapidly approaching this limit and request that a decision from the Water Commission be made.

We have submitted an application to the Water Commission and to our knowledge have supplied the required information to obtain a temporary permit to discharge treated water into the storm drainage system of the City of Austin. The permanent discharge permit application will be processed concurrently.

Due to the financial burden that we are currently experiencing, I would appreciate your attention in getting this matter before the Water Commission. Our attorney, Steve Drenner, and myself are available to discuss this matter so as not to delay our application any further.

Thank you.

Sincerely,

LINCOLN PROPERTY COMPANY

Kevin A. Fleming
Construction Manager

KAF:sd

Southwest OCCUPATIONAL HEALTH SERVICES, INC

TECHNICAL RESOURCE CENTER
[illegible] MAGNOLIA BLVD. MAGNOLIA, TX 77355
(713) [illegible]

Report of
INDUSTRIAL HYGIENE SURVEY
100 CONGRESS AVE.
LINCOLN PROPERTY COMPANY
CONSTRUCTION SITE

Clarence J. Kotrla
CIH #1930
August 26, 1985

REPORT OF
INDUSTRIAL HYGIENE SURVEY
1000 CONGRESS AVE.
LINCOLN PROPERTY COMPANY

SUMMARY

An Industrial Hygiene survey was conducted at the Lincoln Property construction site at 100 Congress Ave. on July 17 and 18, 1985. Twenty-five (25) samples were collected. The results were all below acceptable exposure levels. None of the results were above the OSHA Permissible Exposure Levels in the working environment.

INTRODUCTION

The survey was made to evaluate and document ambient airborne concentrations of representative hydrocarbons. The focus of this industrial hygiene air monitoring activity was to estimate the health risk to the exposed work force, and to aid in minimizing future liabilities to all parties involved.

There are certain conditions necessary prior to significant airborne exposure. These are:

1. There must be an undetected escape of hydrocarbons into the air.
2. The volume and concentration of the escape must be sufficient to cause concentrations to radiate from the escape point.
3. There must be little or no wind for dispersion.
4. People must be within the area and make no attempt to protect themselves.

This survey evaluated the volume and concentration of representative hydrocarbons (benzene & ethyl benzene) to see if they approached or exceeded the concentrations as set forth by the OSHA Standards. (See Table 1)

The work assignments of construction personnel at this site are varied and complex. The assumption was made that people would be in the areas monitored at one time or other and, because of their assignments, would make no effort to escape nor would they wear protective equipment.

METHODOLOGY

The areas where airborne concentration of hydrocarbons may have been present were selected to be sampled. Areas where personnel would be likely to work were also selected. It was noted that the construction offices were under positive pressure and that the warehouse where the soil suspected of contamination was stored was well ventilated.

The sample system used for the survey was a diffusion sampler. Specifically, SKC personal monitors using the 530 series organic vapor dosimeter badge were used. These units are small passive dosimeters which do not require the use of sampling pumps allowing easier placement on personnel and in areas of interest.

METHODOLOGY CONT.

Time-weighted averages (TWA) for the samples were calculated as follows:

$$TWA(\text{in } mg/m^3) = \frac{\text{actual weight of contaminant on sorbent (nanograms)}}{\text{sampling rate S (cc/min) x sampling time T (min)}}$$

These values were converted to parts per million (ppm) as follows:

$$\text{Concentration(ppm)} = \text{concentration}(mg/m^3) \times \frac{T(^{\circ}K)}{273} \times \frac{760}{P(mmHg)} \times \frac{22.4}{MW}$$

Where:

mg/m^3 = milligrams per cubic meter
T = temperature
P = pressure
MW = molecular weight

When the samples were completed they were taken to Texas Research Institute, a Certified Industrial Hygiene laboratory, in Austin for analysis. The initial samples were desorbed and injected into a gas chromatograph to determine possible contaminant exposures. All peaks identifying hydrocarbons were low. The highest and potentially most harmful constitutents were then tested on the remaining samples (benzene & ethyl benzene). This approach was taken because the exposure had been characterized and additional analysis would have been costly without providing additional meaningful information.

The attached table summarizes the data obtained during the survey.

The attached table summarizes the data obtained in the survey.

TABLE 1
INDUSTRIAL HYGIENE SURVEY RESULTS
100 CONGRESS AVE.
CONSTRUCTION SITE

SAMPLE ID	LOCATION/ACTIVITY	ANALYSIS	RESULTS
L1	BLANK/CONTROL	BENZENE	ND
L2	WAREHOUSE,NIGHT	BENZENE	<0.1
L3	WAREHOUSE,NIGHT	BENZENE	<0.1
L4	WAREHOUSE,NIGHT	BENZENE	<0.1
L5	ABOVE COLUMN 4, NIGHT	BENZENE	<0.1
L6	COLUMN 4, ABOVE PIT	BENZENE	0.089
	COLUMN 4, ABOVE PIT	ETHYL BENZENE	0.18
L7	COLUMN 11, ALONG TRENCH(2ND STREET)	BENZENE	<0.04
	COLUMN 11, ALONG TRENCH(2ND STREET)	ETHYL BENZENE	0.14
L8	COLUMN 11, ALONG TRENCH	BENZENE	<0.1
L9	COLUMN 11, ALONG TRENCH	BENZENE	<0.1
L10	COLUMN 11, ALONG TRENCH	BENZENE	<0.1
L11	DON POLK, OPERATOR	BENZENE	<0.3
L12	VOID		N/A
L13	COLUMN 13, OVER SEEP		<0.1
L14	COLUMN 4, OVER SEEP		<0.1
L15	COLUMN 4, OVER SEEP		<0.1
L16	COLUMN 4, OVER SEEP		<0.2
L20	CHARLIE AMOS, LABORER		<0.2
L21	OFFICE ADJACENT TO WAREHOUSE		<0.2
L22	WAREHOUSE		<0.2
L23	WAREHOUSE		<0.2
L24	WAREHOUSE		<0.2
L25	WAREHOUSE		<0.2

*NOTE: SAMPLE NUMBERS 17, 18, AND 19 WERE NOT ASSIGNED.

DISCUSSIONS AND CONCLUSIONS

The breathing environment in the construction excavation, the offices and warehouse tested in this survey were all well below OSHA (Occupational Safety & Health Administration) standards. Most were approaching the lower limits of detectability. Therefore, under the conditions represented by the airborne tests ambient air in these areas should be present no significant exposures to employees or the general public.

During the survey the question of skin contact was discussed. The Manhattan employees and their subcontractors were advised to avoid skin contact with the liquid found in the excavation and wear protective boots and gloves. The type provided was neoprene rubber which is acceptable for the incidental contact expected by the employees. Those who might have had skin contact with the liquid were advised to wash with soap and water. This type of material can cause a burning sensation of the skin and with significant skin exposure over time can cause photo sensitization of the skin.

The following table identifies protective materials useful for various exposures.

PROTECTIVE CLOTHING MATERIAL SELECTION GUIDELINES
FOR VARIOUS PETROLEUM AND PETROCHEMICAL PRODUCTS*

Product	Clothing Material					
	Natural Rubber	Neoprene	Nitrile	Polyvinyl Chloride	Polyvinyl Alcohol	Viton
Benzene	NR	NR	NR	NR	R	HR
Gasoline	NR	R	HR	NR	HR	R
Hexane	NR	HR	HR	NR	HR	HR
Kerosene	NR	HR	HR	NR	HR	R
Mineral Spirits	NR	R	R	HR	--	--
Naphtha, VM&P	NR	R	HR	NR	HR	R
Toluene	NR	NR	NR	NR	R	HR
Xylenes	NR	NR	R	NR	HR	R

Notes: HR = Highly Recommended
R = Recommended
NR = Not Recommended

These are guidelines and not guarantees.

* Adapted from: Schwope, A.D., P.P. Costas, J.O. Jackson, and D.J. Weitzman, Guidelines for the Selection of Chemical Protective Clothing. American Conference of Governmental Industrial Hygienists, 6500 Glenway Ave. Bldg. D-5, Cincinnati, Ohio 45211 (1985).

RECOMMENDATIONS

Based upon the results and observation made during this survey, I recommend the following:

* Identify persons having significant skin contact with the liquid in the excavation.
* Continue use of neoprene protective gloves and boots for those who may come in contact with the liquid.
* Inform the employees of the results of this survey.
* Avoid skin contact with this liquid.

First sample of the water flowing into the pit.
Analyzed for total petroleum hydrocarbons.

PAGE 1 Analytical Serv REPORT LAB # 85-07-01

RECEIVED: 07/01/85 07/03/85 15:57:33

REPORT TO: Radian
BI 4
Austin

ATTEN: Robt. Wallace/Will Boettner

CLIENT: MAXIN SAMPLES: 3
COMPANY: Maxin Eng.
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: GRIMSHAW

WORK ID: 100 Congress Av
TAKEN: WB/RW
TRANS: WB/RW
TYPE:
P.O. #: 229-025-01-20
INVOICE: under separate cover

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 #2
02 #4
03 #5

Analytical Serv TEST CODES and NAMES used on this report

HC IR Hydrocarbons in soil

SAMPLE ID #2 SAMPLE # 01 FRACTIONS: A
Date & Time Collected 07/01/85 Category

HC_IR 27 ug/ml

SAMPLE ID #4 SAMPLE # 02 FRACTIONS: A
Date & Time Collected 07/01/85 Category

HC_IR 2 ug/ml

SAMPLE ID #5 SAMPLE # 03 FRACTIONS: A
Date & Time Collected 07/01/85 Category

HC_IR 13 ug/ml

Sample of water and oil from pit analyzed for:

Total suspended solids
Total tar
Total disolved solids
Total volatiles

7/25/85
LTH

LINCOLN PROPERTIES

WATER and OIL FROM PIT

Total suspended solids	66 mg/kg
Tar (hexane soluble solids)	39 mg/kg
Total dissolved solids	126 mg/kg
Volatiles (GC/MS)	8.2 mg/kg

7/25/95
LJH
0.1 from P.t

① TSS at 50°C -- Tar and solids

$$\frac{0.0027\ g}{41.5\ kg} = 66\ mg/kg$$

② TSS at 105°C with Hexane wash -- Solids (inorganic)

$$\frac{0.0011\ g}{41.5\ kg} = 27\ mg/kg$$

③ Difference of ② - ① -- Tar

39 mg/kg

④ TDS

$$\frac{0.0051\ g}{4.5\ kg} = 126\ mg/kg$$

⑤ Volatiles 8.2 mg/L ≅ 0.0082 mg/g ≅ 8.2 mg/kg
Estimation from GC/MS analysis (7/25/95)

benzene	1500
chlorobenzene	2100
toluene	2200
1,3-dichlorobenzene	2200
TOTAL	8000 mg/L

WT GLASS FIBRE FILTER 0.2075

0.2102 WT FILTER + FILTERED SAMPLE

0.0027 WT SUSPENDED SOLIDS @ 50°C

0.0027 g OF FILTER WASHED w/ 100 mL Hexane Dried at 105°C

WT AFTER 105°C 0.2086 - 0.2075 = 0.0011 g SUSPENDED SOLIDS

WT BEAKER 28.2109

28.2163 (5 mL filtered liquid)

0.0054 WT AFTER 50°C (TDS)

WT BEAKER 28.2109

28.2160

0.0051 WT AFTER 105°C (TDS)

WT VOA 29.8

70.3

40.5 g WT Liquid from PIT

First water sample from the pit analyzed for organic compounds including volatiles, acid and base/neutral fractions.

Volatiles by EPA 624
Acid/Base by EPA 625

Also 20 additional compounds with chromatographs.

PAGE 1 Analytical Serv REPORT LAB # 85-07-015
RECEIVED: 07/02/85 07/11/85 15:48:35

REPORT TO: Radian
B1 4
Austin

ATTEN: Robt. Wallace/Hill Boettner

CLIENT: MAXIN SAMPLES: 3
COMPANY: Maxin Eng.
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY: L. A. Petrowski

CONTACT: GRIMSHAW

WORK ID: No. End of Foundation Excav.
TAKEN:
TRANS: Fed Ex 436499766
TYPE: Qilu Water
P.O. #: 229-025-01-20
INVOICE: under separate cover

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that matrix recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferant present.

SAMPLE IDENTIFICATION

03	Trip Blank VOA
11	06
12	07

Analytical Serv TEST CODES and NAMES used on this report

EX 625	Extraction only - 625 BN/A
IFB BG	BNA Screen by IFB method
M625 A	Method 625 Acid Compounds
M625 B	Method 625 Base/Neutrals
MSNS S	QCMS Characterization-ABN
MSNS V	QCMS Characterization-VOA
MB 624	EPA Method 624/QC-MS

RECEIVED: 07/02/85 Results by Sample

SAMPLE ID #7 FRACTION 12A TEST CODE MS 624 NAME EPA Method 624/GC-MS
Date & Time Collected 07/01/85 Category

DATA FILE 4CU07015V12 DATE INJECTED 07/02/85 ANALYST MM VERIFIED BY LAK
CONC. FACTOR 100 INSTRUMENT f4 COMPOUNDS DETECTED 3

NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT
1V		2V	acrolein	ND	17V		32V	1,2-dichloropropane	ND
2V		3V	acrylonitrile	ND	18V		33V	cis-1,3-dichloropropylene	ND
3V	231	4V	benzene	1500	18V		33V	trans-1,3-dichloropropylene	ND
6V		6V	carbon tetrachloride	ND	19V	423	38V	ethylbenzene	2000
7V		7V	chlorobenzene	ND	22V		44V	methylene chloride	ND
15V		10V	1,2-dichloroethane	ND	21V		45V	methyl chloride	ND
27V		11V	1,1,1-trichloroethane	ND	20V		46V	methyl bromide	ND
14V		13V	1,1-dichloroethane	ND	5V		47V	bromoform	ND
28V		14V	1,1,2-trichloroethane	ND	12V		48V	dichlorobromomethane	ND
23V		15V	1,1,2,2-tetrachloroethane	ND	30V		49V	trichlorofluoromethane	ND
9V		16V	chloroethane	ND	13V		50V	dichlorodifluoromethane	ND
4V		17V	bis (chloromethyl) ether	ND	8V		51V	chlorodibromomethane	ND
10V		19V	2-chloroethylvinyl ether	ND	24V		85V	tetrachloroethylene	ND
11V		23V	chloroform	ND	25V	373	86V	toluene	3000
16V		29V	1,1-dichloroethylene	ND	29V		87V	trichloroethylene	ND
26V		30V	1,2-trans-dichloroethylene	ND	31V		88V	vinyl chloride	ND

KAUFMAN CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 85-07-015
RECEIVED: 07/02/85 Results by Sample

SAMPLE ID #6 FRACTION 11A TEST CODE M625 A NAME Method 625 Acid Compounds
Date & Time Collected 07/01/85 Category

DATA FILE 2CU07015C11 DATE EXTRACTED 07/02/85 ANALYST WA VERIFIED BY LAK
CONC. FACTOR 11 DATE INJECTED 07/05/85 INSTRUMENT COMPOUNDS DETECTED 0

NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT
11A		21A	2,4,6-trichlorophenol	ND	7A		58A	4-nitrophenol	ND
8A		22A	4-chloro-3-methylphenol	ND	5A		59A	2,4-dinitrophenol	ND
1A		24A	2-chlorophenol	ND	4A		60A	2-methyl-4,6-dinitrophenol	ND
2A		31A	2,4-dichlorophenol	ND	9A		64A	pentachlorophenol	ND
3A		34A	2,4-dimethylphenol	ND	10A		65A	phenol	ND
6A		57A	2-nitrophenol	ND					

NOTES AND DEFINITIONS FOR THIS REPORT.
SCAN = scan number or retention time on chromatogram.
All results reported in ug/l unless otherwise specified.
ND = not detected at EPA detection limit method 625. (Federal Register, 11/26/84).

KAUFMAN

PAGE 5 Analytical Serv REPORT LAB # 85-07-015
RECEIVED: 07/02/85 Results by Sample

SAMPLE ID #6 FRACTION 11A TEST CODE M625 B NAME Method 625 Base/Neutrals
Date & Time Collected 07/01/85 Category

DATA FILE 2CU07015C11 DATE EXTRACTED 07/02/85 ANALYST HA VERIFIED BY LAM
CONC. FACTOR 11 DATE INJECTED 07/03/85 INSTRUMENT COMPOUNDS DETECTED 14

NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT
1B	933	1B	acenaphthene	1200	41B		61B	N-nitrosodimethylamine	ND
4B		5B	benzidine	ND	43B		62B	N-nitrosodiphenylamine	ND
46B		8B	1,2,4-trichlorobenzene	ND	42B		63B	N-nitrosodi-n-propylamine	ND
33B		9B	hexachlorobenzene	ND	13B		66B	bis(2-ethylhexyl)phthalate	ND
36B		12B	hexachloroethane	ND	15B		67B	butyl benzyl phthalate	ND
11B		18B	bis(2-chloroethyl)ether	ND	26B		68B	di-butyl phthalate	ND
16B		20B	2-chloronaphthalene	ND	29B		69B	di-n-octyl phthalate	ND
20B		25B	1,2-dichlorobenzene	ND	24B		70B	diethyl phthalate	ND
21B		26B	1,3-dichlorobenzene	ND	25B		71B	dimethyl phthalate	ND
22B		27B	1,4-dichlorobenzene	ND	5B	1617	72B	benzo(a)anthracene A	720
23B		28B	3,3'dichlorobenzidine	ND	6B	1934	73B	benzo(a)pyrene	770
27B		35B	2,4-dinitrotoluene	ND	7B		74B	benzo(b)fluoranthene *	ND
28B		36B	2,6-dinitrotoluene	ND	9B	1848	75B	benzo(k)fluoranthene *	850
29B		37B	1,2-diphenylhydrazine	ND	18B	1623	76B	chrysene A	740
31B	1380	39B	fluoranthene	1700	2B	922	77B	acenaphthylene	1000
17B		40B	4-chlorophenyl phenyl ether	ND	3B	1174	78B	anthracene B	1100

RADIAN

SAMPLE ID #6 FRACTION 11A TEST CODE M625 B NAME Method 625 Base/Neutrals
Date & Time Collected 07/01/85 Category

14B		41B	4-bromophenyl phenyl ether	ND	8B	2483	79B	benzo(ghi)perylene	200
12B		42B	bis(2-chloroisopropyl)ether	ND	32B	1035	80B	fluorene	1400
10B		43B	bis(2-chloroethoxy)methane	ND	44B	1188	81B	phenanthrene B	2400
34B		52B	hexachlorobutadiene	ND	19B		82B	dibenzo(a,h)anthracene	ND
35B		53B	hexachlorocyclopentadiene	ND	37B	2353	83B	indeno(1,2,3-cd)pyrene	220
38B		54B	isophorone	ND	45B	1417	84B	pyrene	1300
39B	678	55B	naphthalene	8000					
40B		56B	nitrobenzene	ND					

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/l unless otherwise specified.

ND = not detected at EPA detection limit method 625. (Federal Register, 11/26/84).

* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.

A = benzo(a)anthracene and chrysene co-elute in high concentrations.

B = anthracene and phenanthrene co-elute in high concentrations.

RADIAN

PAGE 7 Analytical Serv REPORT LAB # 85-07-015
RECEIVED: 07/02/85 Results by Sample

SAMPLE ID #6 FRACTION 11A TEST CODE MSNS S NAME GCMS Characterization-ABN
Date & Time Collected 07/01/85 Category

CHRO # 2CU07015C1 VERIFIED BY LAK
SAMPLE SIZE 920 ml DATE ANALYZED 07/05/85 UNITS ug/l

SCAN	COMPOUND	RESULT	CONF LEVEL	REF CMPD
785	2-methylnaphthalene	3200		
980	dibenzofuran	260		
523	benzene, 1-propenyl-	4500		
532	1h-indene	8100		
641	cyclopropa[a]indene, 1, 1a, 6, 6a-tetra hydro	870		
648	cyclopropa[a]indene, 1, 1a, 6, 6a-tetra hydro	1000		
802	naphthalene, 1-methyl-	3700		
829	1, 1'-biphenyl	1800		
884	Naphthalene, 2, 7-dimethyl	1600		
897	naphthalene, 2, 3-dimethyl	2400		
1069	1h-phenalene	660		
1124	9H-fluorene, 4-methyl-	320		
1167	dibenzothiophene	510		
[illegible]	[illegible]	[illegible]		

[redacted]

PAGE 8 Analytical Serv REPORT LAB # 85-07-015
RECEIVED: 07/02/85 Results by Sample

SAMPLE ID #6 FRACTION 11B TEST CODE MSNS S NAME GCMS Characterization-ABN
Date & Time Collected 07/01/85 Category

CHRO # 2CU07015C1 VERIFIED BY LAK
SAMPLE SIZE 920 ml DATE ANALYZED 07/02/85 UNITS ug/l

SCAN	COMPOUND	RESULT	CONF LEVEL	REF CMPD
1282	phenanthrene,4-methyl	1700		
1266	phenanthrene,3-methyl	1200		
1314	naphthalene,2-phenyl	840		

[redacted]

PAGE 9 Analytical Serv REPORT LAB # 85-07-015
RECEIVED: 07/02/85 Results by Sample

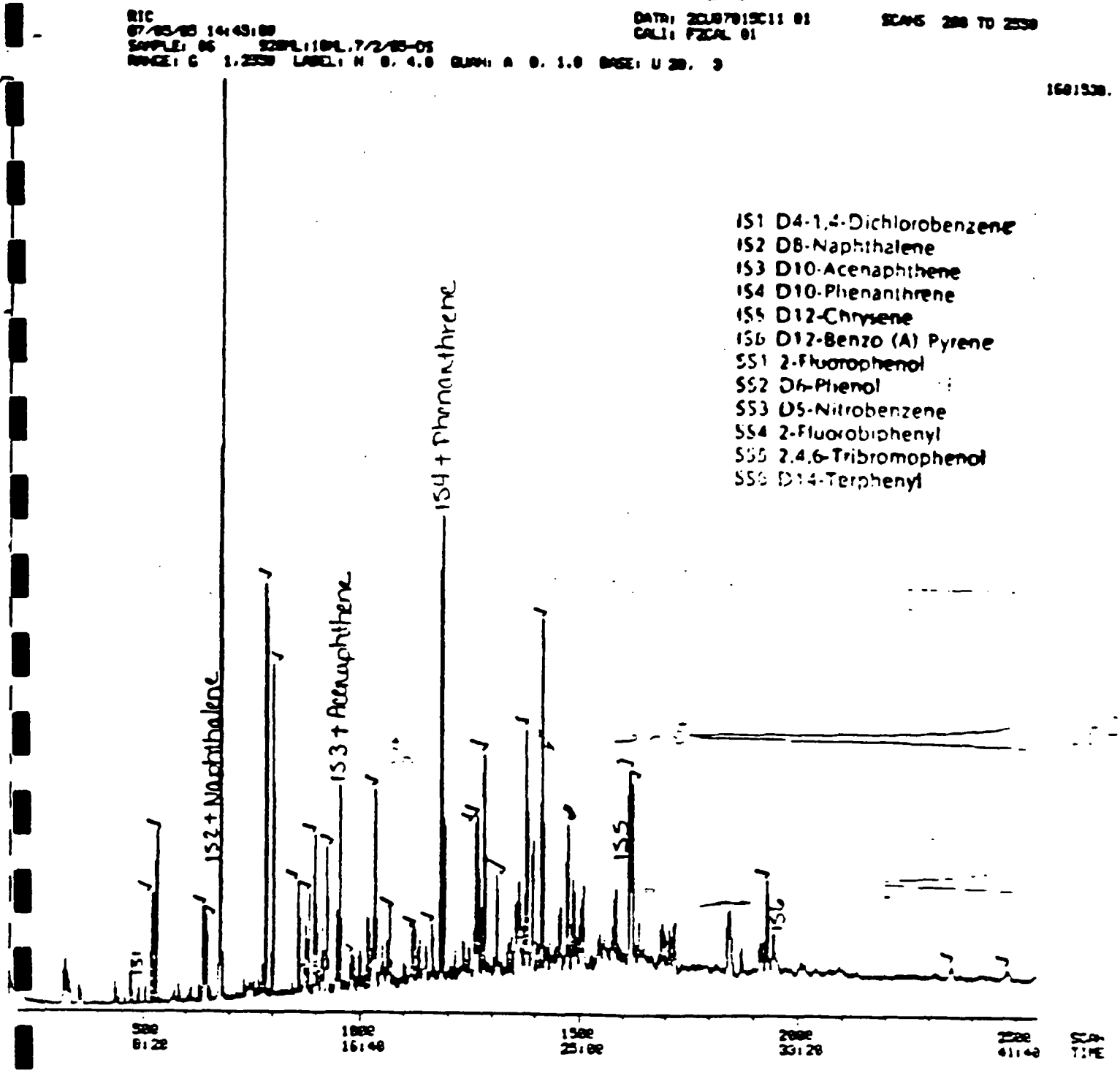
SAMPLE ID #7 FRACTION 12A TEST CODE MSNS V NAME GCMS Characterization-VOA
Date & Time Collected 07/01/85 Category

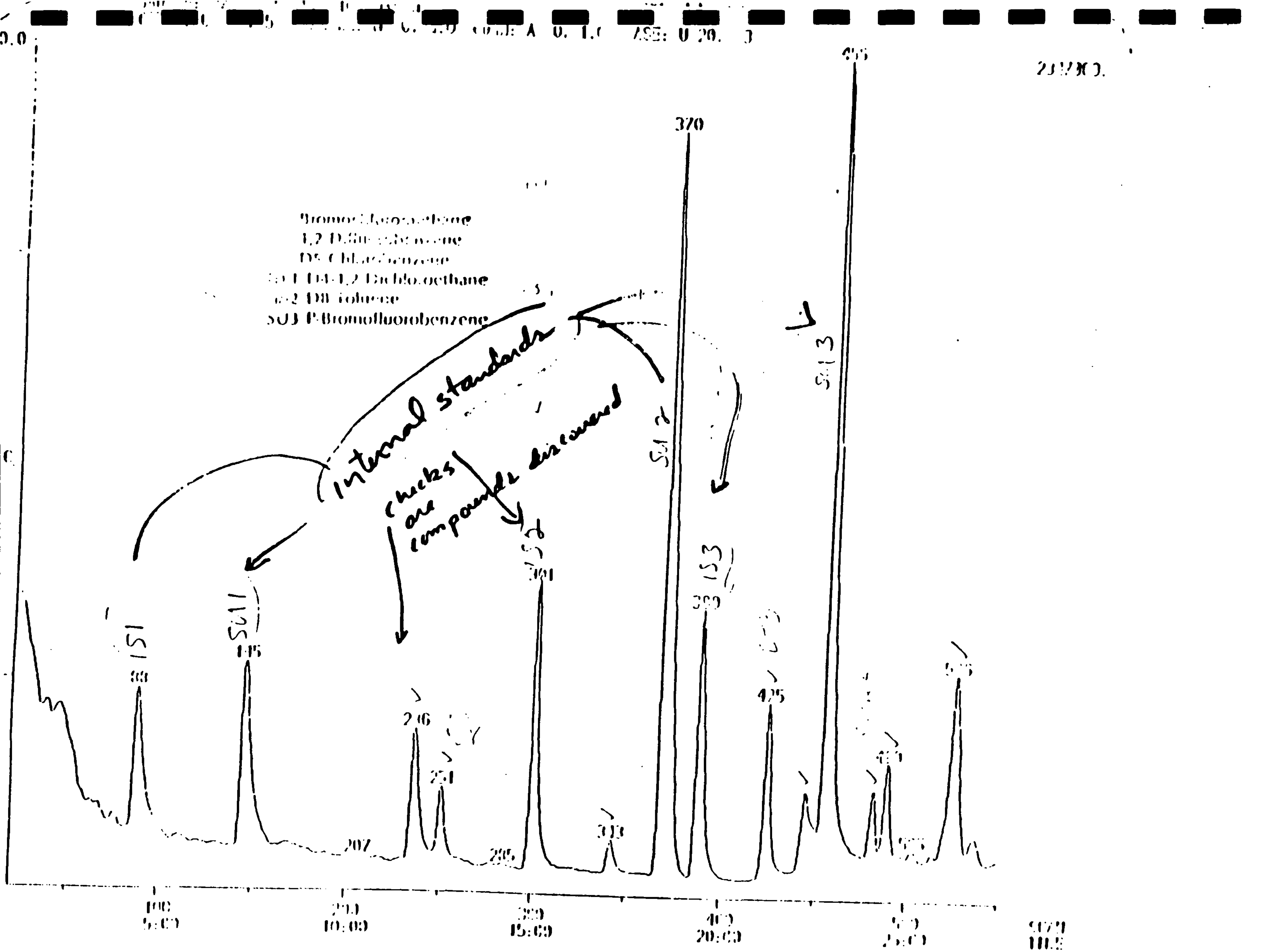
CHRO # 4CQ07015V2 VERIFIED BY LAK
SAMPLE SIZE 30 ml DATE ANALYZED 07/02/85 UNITS ug/l

SCAN	COMPOUND	RESULT	CONF LEVEL	REF CMPD
483	total xylenes	2200		
526	2,3-dihydro-1h-indene	2500		

RADIAN DC # 4458- 0

ANALYST: WAA





Bromochloromethane
1,2 Difluorobenzene
D5 Chlorobenzene
1,2 Dichloroethane
D8 Toluene
SO3 P-Bromofluorobenzene
internal standards
checks are compounds discovered
370
301
425
SU1
SU2
SU3
IS1
IS2
IS3
100
5:00
15:00
20:00

RCRA ANALYSIS OF CONTAMINATED SOIL AND PIT WATER.

KAIAN

PAGE 1 Analytical Serv REPORT LAB # 85-07-165
RECEIVED: 07/22/85 07/24/85 14:23:43

REPORT TO: Radian
81. 4
Austin

ATTEN: Robt. Wallace/Hill Boettner

CLIENT: MAXIN SAMPLES: 6
COMPANY: Maxin Eng.
FACILITY:

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd.
P.O. Box 9948
Austin, Texas 78766

ATTEN:
PHONE: (512) 454-4797

CERTIFIED BY

CONTACT: GRIMSHAW

WORK ID: soil and water, RCRA
TAKEN: LH
TRANS: MW
TYPE:
P.O. #: 229-023-01-20
INVOICE: under separate cover

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 LP-001
02 LP-002
03 LP-001 EP
04 LP-002 EP
05 LP-003
06 LP-004

Analytical Serv TEST CODES and NAMES used on this report

COR PH	Corrosivity
EP MET	RCRA Metals
IGNIT	Ignitability-aqueous
IGNITS	Ignitability-solids
MOIST	percent moisture
PH A	pH
REACT	Reactivity

KARIAN

PAGE 2 Analytical Serv REPORT LAB # 85-07-165
RECEIVED: 07/22/85 RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 05 (entered units)	Sample 06 (entered units)
COR_PH pH units	6.29	6.34		
IGNIT degrees F			>160	>160
IGNITS yes/no	no	no		
MOIST %	10	18		
PH_A pH units			7.96	7.97
REACT + or -	-	-	-	-

KARIAN

PAGE 3 Analytical Serv REPORT LAB # 85-07-165
RECEIVED: 07/22/85 Results by Sample

SAMPLE ID LP-001 EP FRACTION 03A TEST CODE EP MET NAME RCRA Metals
Date & Time Collected not specified Category

DATE ANALYZED 07/22/85 VERIFIED BY GMC

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	0.017	AS	Arsenic	0.08*
BA	Barium	0.36	HG	Mercury	<0.0002
CD	Cadmium	<0.002	PB	Lead	<0.08
CR	Chromium	0.024*	SE	Selenium	0.08*

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified
NA = not analyzed
* = less that 5 times the detection limit
All elements determined by ICPES except Hg

KARIAN

PAGE 4 Analytical Serv REPORT LAB # 85-07-165
RECEIVED: 07/22/85 Results by Sample

SAMPLE ID LP-002 EP FRACTION 04A TEST CODE EP MET NAME RCRA Metals
Date & Time Collected not specified Category

DATE ANALYZED 07/22/85 VERIFIED BY QMC

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	0.015	AS	Arsenic	0.08*
BA	Barium	0.36	HG	Mercury	<0.0002
CD	Cadmium	<0.002	PB	Lead	<0.08
CR	Chromium	0.022*	SE	Selenium	<0.08

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit
All elements determined by ICPES except Hg

RADIAN

PAGE 5 Analytical Serv REPORT LAB # 85-07-165
RECEIVED: 07/22/85 Results by Sample

SAMPLE ID LP-003 FRACTION 05A TEST CODE EP MET NAME RCRA Metals
Date & Time Collected 07/19/85 Category

DATE ANALYZED 07/22/85 VERIFIED BY QMC

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	<0.002	AS	Arsenic	<0.06
BA	Barium	0.28	HG	Mercury	<0.0002
CD	Cadmium	<0.002	PB	Lead	<0.08
CR	Chromium	0.13	SE	Selenium	<0.08

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 5 times the detection limit.
All elements determined by ICPES except Hg.

KAZIAN

PAGE 6 Analytical Serv REPORT LAB # 85-07-165
RECEIVED: 07/22/85 Results by Sample

SAMPLE ID LP-004 FRACTION 06A TEST CODE EP MET NAME RCRA Metals
Date & Time Collected 07/19/85 Category

DATE ANALYZED 07/22/85 VERIFIED BY QMC

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	<0.002	AS	Arsenic	0.01*
BA	Barium	0.28	HG	Mercury	<0.0002
CD	Cadmium	<0.002	PB	Lead	<0.08
CR	Chromium	0.010*	SE	Selenium	<0.08

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.
NA = not analyzed
* = less that 3 times the detection limit
All elements determined by ICPES except Hg

Treatability results for 100 Congress water.

ATTACHMENT A

Granulated Activated Carbon (GAC) Treatability
Tests on Wastewater Samples from the
100 Congress Avenue Construction Site
Austin, Texas

Granuleted Activated Carbon (GAC) Treatability Tests on Wastewater Samples from the 100 Congress Avenue Construction Site, Austin, Texas

An activated carbon isotherm and a column test were performed on a wastewater sample from the 100 Congress Avenue construction site. Prior analysis of this wastewater indicated the presence of toxic base/neutral organics as the pollutants of concern. Volatile and acid fraction organics were either not detected or present at ug/L levels.

An isotherm was conducted at seven dose levels using Filtrasorb 300 from Calgon. The results of this isotherm in terms of residual TOC values are shown in Figure A-1. The maximum carbon loading for an effluent TOC of 1 mg/L based on this isotherm is approximately 2.5 mg/g. It is important to note that the base/neutral organics identified in the water (anthracene, phenanthrene, naphthalene, etc.) are readily sorbable, having adsorption capacities at 1 mg/L equilibrium concentrations of 100-300 mg/g of carbon. A base/neutral analysis of the wastewater after one of the lower carbon dose rates revealed only low levels (<10 ug/L) of polynuclear aromatics. Consequently, the organic material which is not readily sorbable is most likely biological in nature (carboxylic acids, alcohols, humic acids, other compounds not originating from the coal tar). These compounds are generally amenable to biological degradation.

In order to confirm the isotherm information, a column test was run using carbon and the wastewater. The results of this test are presented in Figure A-2. This figure shows the influent and effluent TOC as a function of the volume of water treated. A sample taken after about 80 bed volumes was analyzed for base neutral organics. The only compound identified in this category

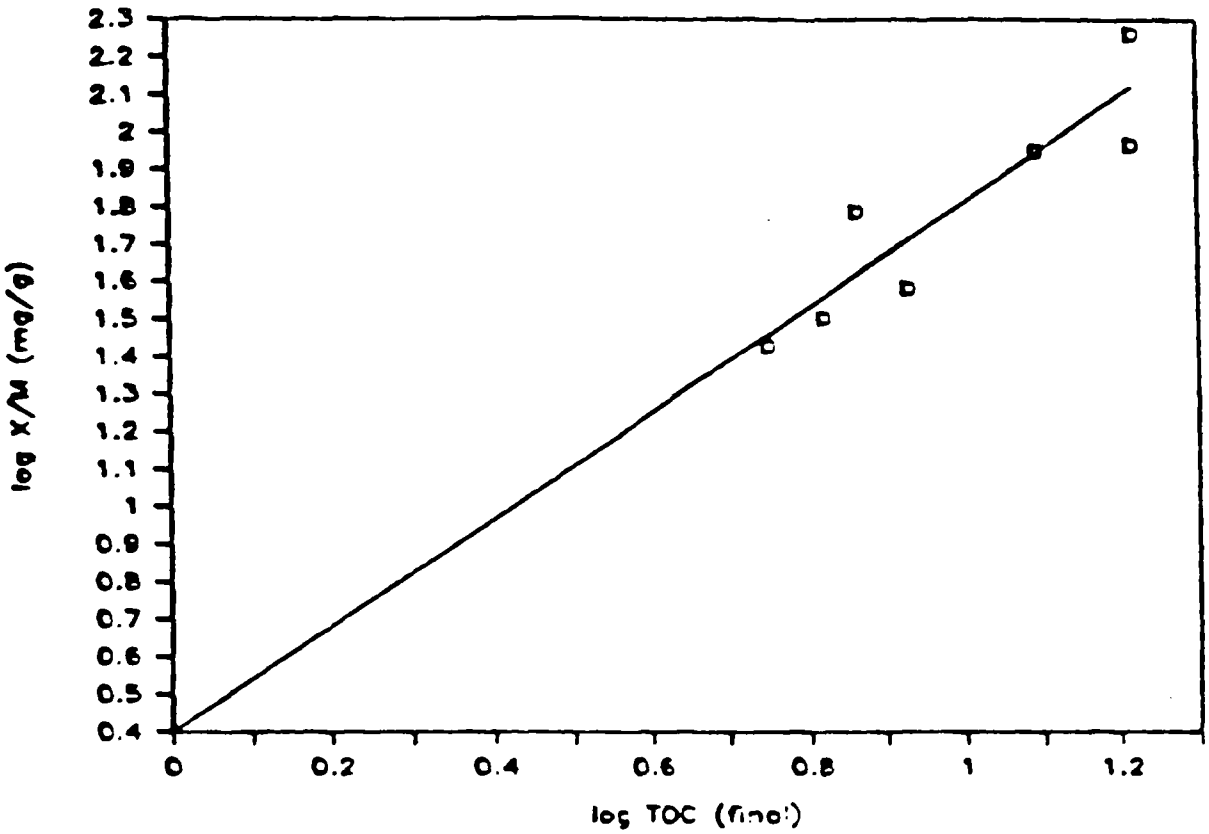


Figure A-1. Isotherm in terms of residual TOC, 100 Congress Avenue Construction Site

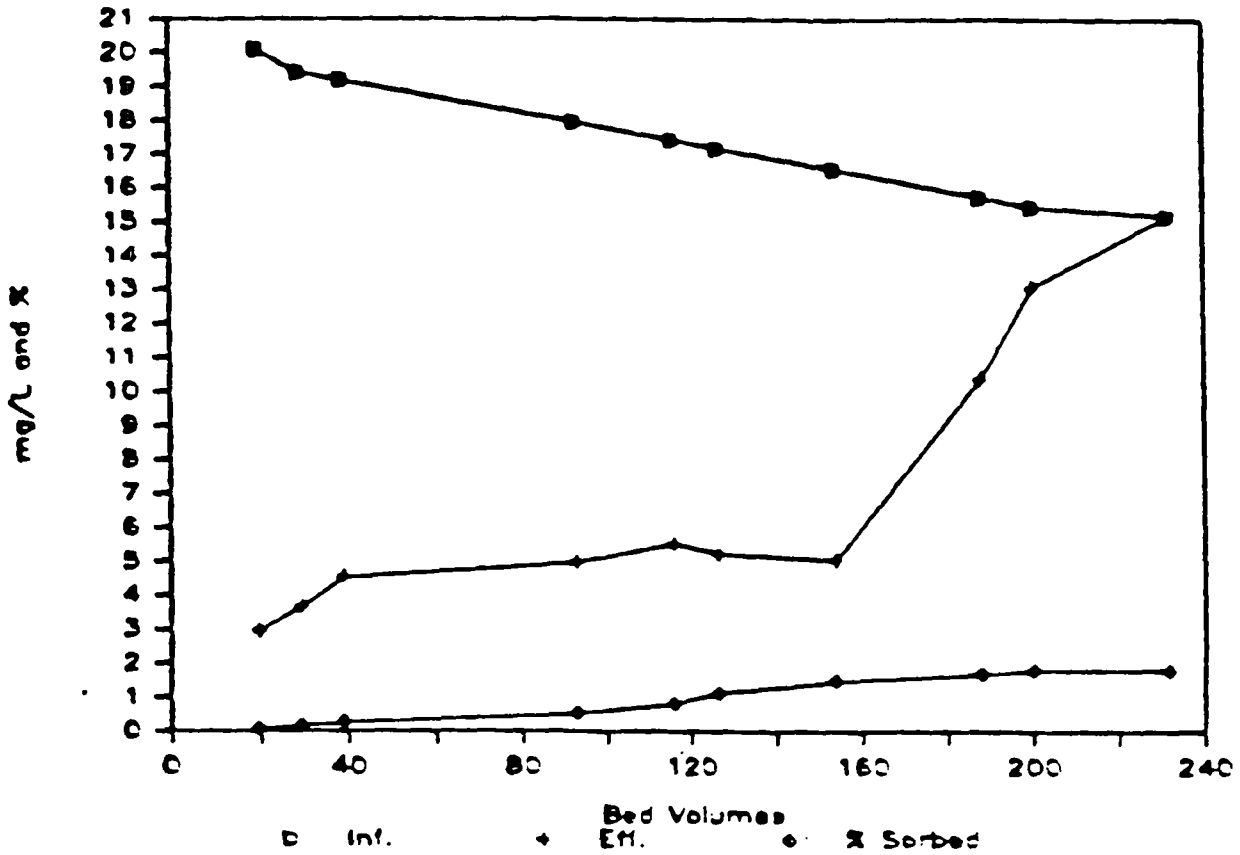


Figure A-2. GAC Column Test Results, 100 Congress Avenue Construction Site

was a substituted pthelate, possibly contributed by plasticizers in the sample bottle. This indicates that the carbon is doing a very effective job in controlling the toxic organics even though the TOC removal is not high. Consequently, it is difficult to specify the appropriate test to monitor the performance of the activated carbon.

Total organic carbon is an easily measured value, however, in this as in many other wastewaters, it includes both toxic and non-toxic organic compounds. There are indications that normal construction site runoff is contributing a TOC load which is much more amenable to biological degradation than carbon adsorption. Gas chromatography/mass spectroscopy (GC/MS) is used to identify all of the toxic compounds present in the water. Although this is a semi-quantitive measurement, there is a large discrepancy between the sum of toxic organics determined by GC/MS and the TOC value. Consequently, the carbon could be removing all the toxics and only a slight decrease in TOC influent and effluent values would be seen. This indicates that GC/MS should be used as the monitoring parameter; however, it is a time-consuming and costly procedure for routine discharge process monitoring.

A more cost-effective and timely measurement would be based on a total extractable organic analysis. In this procedure, the sample is prepared in the same manner as for the base/neutral GC/MS test, extraction with methylene chloride. This extraction does not remove biological organic compounds. Instead of using the GC/MS, a gas chromatograph is employed. The total area of the chromatogram is obtained and reported as total extractable organics (TEO) without any speciation.

Based upon the isotherm and column test results, Radian suggests the following approach be taken for treatment and monitoring of the wastewater found at the 100 Congress Avenue site:

Treatment -

Collection of water in a 20,000-gallon frac tank, allowing solids to settle, followed by filtration of water through activated carbon for removal of toxic organics with discharge to a sanitary or storm sewer.

Monitoring -

Weekly monitoring of TOC from first and second carbon column effluents. Measurement of total extractable organics required by permit.

Limits -

TOC effluent not to exceed 20 mg/L unless total extractable organics is less than 0.5 mg/L.

Although this permit is somewhat irregular, Radian feels that it is justified because of the uniqueness of the situation. The wastewater composition is highly variable, dependent upon such conditions as recent rainfall and construction site operations. As demonstrated by the isotherm and column tests, TOC effluent levels of 5-15 ppm do not contain any toxic organics after contact with carbon. Consequently, as long as the TOC is being removed across the carbon, it is most probable that no toxics are being discharged. If, due to unforeseen circumstances, the TOC should exceed 20 mg/L in the effluent, Lincoln/Austin Venture Company has the option of either replacing the carbon or performing the total extractable organic analysis to determine if breakthrough has occurred. If the TEO result is above 0.5 mg/l, the carbon will be replaced. The proposed activated carbon absorber units are described in the attached technical bulletin.

Radian feels that this treatment system is the most cost-effective and environmentally sound procedure available. The use of activated carbon to control toxic organics is well documented and considered to be a tertiary treatment, a step above the City's own wastewater treatment practices. The small flow (<10 gpm) of detoxified water would have a negligible impact on any receiving body of water.

Before (Con-1) and After (Con-2, Con-3) Treatment by Carbon Beds
Analytical Results.

PAGE 1 Analytical Serv REPORT LAB # 85-10-058

RECEIVED: 10/10/85 10/31/85 15:10:43

REPORT TO: Radian
BI 4
Austin

ATTEN: Robert Wallace

CLIENT: LINCOLN SAMPLES: 3
COMPANY: Lincoln Properties
FACILITY: Congress Av

WORK ID: pre- and post-treatment
TAKEN: BJH
TRANS: BJH
TYPE:
P O #: 229-025-05-20
INVOICE: under separate cover

PREPARED BY: Radian Analytical Services
8501 MoPac Blvd
P O Box 9948
Austin, Texas 78766
ATTEN:
PHONE: (512) 454-4727

CERTIFIED BY

CONTACT GRIMSHAW

**Sample was yellow in color
B Compound detected in Reagent Blank at less than method MDL, background correction not performed
NA-Not applicable

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

Q1 Con-1
Q2 Con-2
Q3 Con-3

Analytical Serv TEST CODES and NAMES used on this report

AG E	Silver, ICPES
AS HA	Arsenic Hydride
BA E	Barium, ICPES
BOD5	Biological Oxygen Demand
B E	Boron, ICPES
CD E	Cadmium, ICPES
CH2O	Formaldehyde
CL IC	Chloride IC
COD A	Chemical Oxygen Demand
CR E	Chromium, ICPES
CU E	Copper, ICPES
EX 625	Extraction only - 625 BN/A
HG CA	Mercury, Cold Vapor
M625 A	Method 625 Acid Compounds
M625 B	Method 625 Base/Neutrals
MN E	Manganese, ICPES
MS 624	EPA Method 624/GC-MS
NI E	Nickel, ICPES
OPO4 A	Orthophosphate
PB GA	Lead, low level
PH A	pH
SE HA	Selenium Hydride
SO4 IC	Sulfate IC
ZN E	Zinc, ICPES

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)
AG_E ug/ml	0.004*	0.003*	
AS_HA ug/ml	0.007*	0.007*	
BA_E ug/ml	0.18	0.084	
BOD5 mg/L	4	1	
B_E ug/ml	1.1	0.23*	
CD_E ug/ml	<0.002	<0.002	
CH2O mg/L	0.2	0.2**	
CL_IC mg/L	72	77	
COD_A mg/L	110	7	
CR_E ug/ml	0.013*	0.010*	
CU_E ug/ml	0.008	0.001*	
EX_625 date complete	10/15/85	10/15/85	10/15/85
HG_CA ug/ml	<0.0002	<0.0002	
MN_E ug/ml	0.12	0.016	

NI_E ug/ml	0.017	0.003*
OPO4_A mg/L	1.5	0.18
PB_GA ug/ml	<0.002	<0.002
PH_A pH units	8.16	8.25
SE_HA ug/ml	<0.002	<0.002
SO4_IC mg/L	740	345
ZN_E ug/ml	0.003*	<0.003

RADIAN CORPORATION

PAGE 4 Analytical Serv REPORT LAB # 85-10-058
RECEIVED: 10/10/85 Results by Sample

SAMPLE ID Con-1 FRACTION OIG TEST CODE M625 A NAME Method 625 Acid Compounds
Date & Time Collected 10/03/85 Category

DATA FILE 2CU10058C01 DATE EXTRACTED 10/15/85 ANALYST SE VERIFIED BY LAK
CONC FACTOR 1 DATE INJECTED 10/23/85 INSTRUMENT 32 COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	50A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

NOTES AND DEFINITIONS FOR THIS REPORT
SCAN = scan number or retention time on chromatogram
All results reported in ug/l unless otherwise specified
ND = not detected at EPA detection limit method 625, (Federal Register, 11/26/84).

KAVIAN CORPORATION

PAGE 5 Analytical Serv REPORT LAB # 85-10-058
RECEIVED: 10/10/85 Results by Sample

SAMPLE ID Con-1 FRACTION OIG TEST CODE M625 B NAME Method 625 Base/Neutrals
Date & Time Collected 10/03/85 Category

DATA FILE 2CU1005BC01 DATE EXTRACTED 10/15/85 ANALYST SE VERIFIED BY LAB
CONC FACTOR 1 DATE INJECTED 10/20/85 INSTRUMENT 32 COMPOUNDS DETECTED 6

NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT
1B	946	1B	acenaphthene	7	41B		61B	N-nitrosodimethylamine	ND
4B		5B	benzidine	ND	43B		62B	N-nitrosodiphenylamine	ND
46B		8B	1,2,4-trichlorobenzene	ND	42B		63B	N-nitrosodi-n-propylamine	ND
33B		9B	hexachlorobenzene	ND	13B	1611	66B	bis(2-ethylhexyl)phthalate	7
36B		12B	hexachloroethane	ND	15B		67B	butyl benzyl phthalate	ND
11B		18B	bis(2-chloroethyl)ether	ND	26B	1276	68B	di-butyl phthalate	10
16B		20B	2-chloronaphthalene	ND	29B		69B	di-n-octyl phthalate	ND
20B		25B	1,2-dichlorobenzene	ND	24B		70B	diethyl phthalate	ND
21B		26B	1,3-dichlorobenzene	ND	25B		71B	dimethyl phthalate	ND
22B		27B	1,4-dichlorobenzene	ND	5B		72B	benzo(a)anthracene A	ND
23B		28B	3,3'dichlorobenzidine	ND	6B		73B	benzo(a)pyrene	ND
27B		35B	2,4-dinitrotoluene	ND	7B		74B	benzo(b)fluoranthene *	ND
28B		36B	2,6-dinitrotoluene	ND	9B		75B	benzo(k)fluoranthene *	ND
29B		37B	1,2-diphenylhydrazine	ND	18B		76B	chrysene A	ND
31B	1366	39B	fluoranthene	5	2B		77B	acenaphthylene	ND
17B		40B	4-chlorophenyl phenyl ether	ND	3B	1183	78B	anthracene B	2

SAMPLE ID Con-1 FRACTION 01G TEST CODE M625 B NAME Method 625 Base/Neutrals
Date & Time Collected 10/03/85 Category

14B		41B	4-bromophenyl phenyl ether	ND		80		79B	benzo(ghi)perylene ND
12B		42B	bis(2-chloroisopropyl)ether	ND		32B	1025	80B	fluorene 3
10B		43B	bis(2-chloroethoxy)methane	ND		44B	1175	81B	phenanthrene B 8
34B		52B	hexachlorobutadiene	ND		19B		82B	dibenzo(a,h)anthracene ND
35B		53B	hexachlorocyclopentadiene	ND		37B		83B	indeno(1,2,3-cd)pyrene ND
38B		54B	isophorone	ND		45B		84B	pyrene ND
39B	673	55B	naphthalene	3					
40B		56B	nitrobenzene	ND					

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in ug/l unless otherwise specified

ND = not detected at EPA detection limit method 625. (Federal Register, 11/26/84)

* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute

A = benzo(a)anthracene and chrysene co-elute in high concentrations

B = anthracene and phenanthrene co-elute in high concentrations

Analytical Serv REPORT LAB # 85-10-058

RECEIVED: 10/10/85

Results by Sample

SAMPLE ID Con-1 FRACTION 01E TEST CODE MS 624 NAME EPA Method 624/GC-MS

Date & Time Collected 10/03/85 Category

DATA FILE 4CU10058V01 DATE INJECTED 10/16/85 ANALYST MM VERIFIED BY LAK

CONC FACTOR 1 INSTRUMENT 3400 COMPOUNDS DETECTED 5

NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT
1V		2V	acrolein	NA	17V		32V	1,2-dichloropropane	ND
2V		3V	acrylonitrile	NA	18V		33V	cis-1,3-dichloropropylene	ND
3V		4V	benzene	ND	19V		34V	trans-1,3-dichloropropylene	ND
6V		6V	carbon tetrachloride	ND	19V		38V	ethylbenzene	ND
7V		7V	chlorobenzene	ND	22V	106	44V	methylene chloride	10 B
15V		10V	1,2-dichloroethane	ND	21V		45V	methyl chloride	ND
27V		11V	1,1,1-trichloroethane	ND	20V		46V	methyl bromide	ND
14V		13V	1,1-dichloroethane	ND	5V		47V	bromoform	ND
28V		14V	1,1,2-trichloroethane	ND	12V		48V	dichlorobromomethane	ND
23V		15V	1,1,2,2-tetrachloroethane	ND	30V		49V	trichlorofluoromethane	ND
9V		16V	chloroethane	ND	13V		50V	dichlorodifluoromethane	NA
4V		17V	bis (chloromethyl) ether	NA	8V		51V	chlorodibromomethane	ND
10V		19V	2-chloroethylvinyl ether	ND	24V		85V	tetrachloroethylene	ND
11V		23V	chloroform	ND	25V		86V	toluene	ND
16V		29V	1,1-dichloroethylene	ND	29V		87V	trichloroethylene	ND
26V		30V	1,2-trans-dichloroethylene	ND	31V		88V	vinyl chloride	ND

[redacted] CORPORATION

PAGE 8 Analytical Serv REPORT LAB # 85-10-058
RECEIVED: 10/10/85 Results by Sample Continued From Above

SAMPLE ID Con-1 FRACTION 01E TEST CODE MS 624 NAME EPA Method 624/GC-MS
Date & Time Collected 10/03/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT
SCAN = scan number or retention time on chromatogram.
All results reported in ug/l unless otherwise specified.
ND = not detected at EPA detection limit method 624. (Federal Register, 12/3/79)

Analytical Serv REPORT

LAB # 85-10-058

RECEIVED: 10/10/85

Results by Sample

SAMPLE ID Con-2 FRACTION 02G TEST CODE M625 B NAME Method 625 Base/Neutrals

Date & Time Collected 10/07/85 Category

DATA FILE 2CU10058C02 DATE EXTRACTED 10/15/85 ANALYST WJL VERIFIED BY LAK

CONC. FACTOR 1 DATE INJECTED 10/22/85 INSTRUMENT 32 COMPOUNDS DETECTED 2

NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT
1B		1B	acenaphthene	ND	41B		61B	N-nitrosodimethylamine	ND
4B		5B	benzidine	ND	43B		62B	N-nitrosodiphenylamine	ND
46B		8B	1,2,4-trichlorobenzene	ND	42B		63B	N-nitrosodi-n-propylamine	ND
33B		9B	hexachlorobenzene	ND	13B	1615	66B	bis(2-ethylhexyl)phthalate	6
36B		12B	hexachloroethane	ND	15B		67B	butyl benzyl phthalate	ND
11B		18B	bis(2-chloroethyl)ether	ND	26B	1279	68B	di-butyl phthalate	14
16B		20B	2-chloronaphthalene	ND	29B		69B	di-n-octyl phthalate	ND
20B		25B	1,2-dichlorobenzene	ND	24B		70B	diethyl phthalate	ND
21B		26B	1,3-dichlorobenzene	ND	25B		71B	dimethyl phthalate	ND
22B		27B	1,4-dichlorobenzene	ND	5B		72B	benzo(a)anthracene A	ND
23B		28B	3,3'dichlorobenzidine	ND	6B		73B	benzo(a)pyrene	ND
27B		35B	2,4-dinitrotoluene	ND	7B		74B	benzo(b)fluoranthene *	ND
28B		36B	2,6-dinitrotoluene	ND	9B		75B	benzo(k)fluoranthene *	ND
29B		37B	1,2-diphenylhydrazine	ND	18B		76B	chrysene A	ND
31B		39B	fluoranthene	ND	2B		77B	acenaphthylene	ND
17B		40B	4-chlorophenyl phenyl ether	ND	3B		78B	anthracene B	ND

AMPLE ID Con-2 FRACTION 02G TEST CODE M625 B NAME Method 625 Base/Neutrals
Date & Time Collected 10/07/85 Category

14B	41B	4-bromophenyl phenyl ether	ND	88	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

OTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/l unless otherwise specified.

ND = not detected at EPA detection limit method 625. (Federal Register, 11/26/84).

\# = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute

A = benzo(a)anthracene and chrysene co-elute in high concentrations.

B = anthracene and phenanthrene co-elute in high concentrations

PAGE 11 Analytical Serv REPORT LAB # 85-10-058
RECEIVED: 10/10/85 Results by Sample

SAMPLE ID Con-2 FRACTION 02E TEST CODE MS 624 NAME EPA Method 624/GC-MS
Date & Time Collected 10/07/85 Category

DATA FILE 4CU10058V02 DATE INJECTED 10/16/85 ANALYST MM VERIFIED BY LAK
CONC. FACTOR 1 INSTRUMENT 3400 COMPOUNDS DETECTED 9

NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT
1V		2V	acrolein	NA	17V		32V	1,2-dichloropropane	ND
2V		3V	acrylonitrile	NA	18V		33V	cis-1,3-dichloropropylene	ND
3V		4V	benzene	ND	18V		33V	trans-1,3-dichloropropylene	ND
6V		6V	carbon tetrachloride	ND	19V		30V	ethylbenzene	ND
7V		7V	chlorobenzene	ND	22V	102	44V	methylene chloride	118
15V		10V	1,2-dichloroethane	ND	21V		45V	methyl chloride	ND
27V		11V	1,1,1-trichloroethane	ND	20V		46V	methyl bromide	ND
14V		13V	1,1-dichloroethane	ND	5V		47V	bromoform	ND
28V		14V	1,1,2-trichloroethane	ND	12V		48V	dichlorobromomethane	ND
23V		15V	1,1,2,2-tetrachloroethane	ND	30V		49V	trichlorofluoromethane	ND
9V		16V	chloroethane	ND	13V		50V	dichlorodifluoromethane	NA
4V		17V	bis (chloromethyl) ether	NA	8V		51V	chlorodibromomethane	ND
10V		19V	2-chloroethylvinyl ether	ND	24V		85V	tetrachloroethylene	ND
11V		23V	chloroform	ND	25V		86V	toluene	ND
16V		29V	1,1-dichloroethylene	ND	29V		87V	trichloroethylene	ND
26V		30V	1,2-trans-dichloroethylene	ND	31V		88V	vinyl chloride	ND

 Analytical Serv REPORT LAB # 85-10-058
CEIVED: 10/10/85 Results by Sample Continued From Above

MPLE ID Con-2 FRACTION 02E TEST CODE MS 624 NAME EPA Method 624/GC-MS
Date & Time Collected 10/07/85 Category

TES AND DEFINITIONS FOR THIS REPORT
SCAN = scan number or retention time on chromatogram
All results reported in ug/l unless otherwise specified.
ND = not detected at EPA detection limit method 624. (Federal Register, 12/3/79)

SAMPLE ID Con-3 FRACTION 03A TEST CODE M625 B NAME Method 625 Base/Neutrals
Date & Time Collected 09/27/85 Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in ug/l unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 11/26/84).

* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.

A = benzo(a)anthracene and chrysene co-elute in high concentrations.

B = anthracene and phenanthrene co-elute in high concentrations

RECEIVED: 10/10/85 Results by Sample

SAMPLE ID Con-3 FRACTION 03A TEST CODE M625 B NAME Method 625 Base/Neutrals

Date & Time Collected 09/27/85 Category

DATA FILE 2CU10058C03 DATE EXTRACTED 10/15/85 ANALYST WL VERIFIED BY LAK

CONC. FACTOR 1 DATE INJECTED 10/22/85 INSTRUMENT 32 COMPOUNDS DETECTED 1

NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT
1B		1B	acenaphthene	ND	41B		61B	N-nitrosodimethylamine	ND
4B		5B	benzidine	ND	43B		62B	N-nitrosodiphenylamine	ND
46B		8B	1,2,4-trichlorobenzene	ND	42B		63B	N-nitrosodi-n-propylamine	ND
33B		9B	hexachlorobenzene	ND	13B		66B	bis(2-ethylhexyl)phthalate	ND
34B		12B	hexachloroethane	ND	15B		67B	butyl benzyl phthalate	ND
11B		18B	bis(2-chloroethyl)ether	ND	26B	1277	68B	di-butyl phthalate	14
16B		20B	2-chloronaphthalene	ND	29B		69B	di-n-octyl phthalate	ND
20B		25B	1,2-dichlorobenzene	ND	24B		70B	diethyl phthalate	ND
21B		26B	1,3-dichlorobenzene	ND	25B		71B	dimethyl phthalate	ND
22B		27B	1,4-dichlorobenzene	ND	5B		72B	benzo(a)anthracene A	ND
23B		28B	3,3'dichlorobenzidine	ND	6B		73B	benzo(a)pyrene	ND
27B		35B	2,4-dinitrotoluene	ND	7B		74B	benzo(b)fluoranthene *	ND
28B		36B	2,6-dinitrotoluene	ND	9B		75B	benzo(k)fluoranthene *	ND
29B		37B	1,2-diphenylhydrazine	ND	18B		76B	chrysene A	ND
31B		39B	fluoranthene	ND	2B		77B	acenaphthylene	ND
17B		40B	4-chlorophenyl phenyl ether	ND	3B		78B	anthracene B	ND

To SF
File
TXD981155971

ATTACHMENT 1

CLOSURE PLAN FOR 100 CONGRESS AVENUE

RADIAN
CORPORATION

CLOSURE PLAN FOR
THE 100 CONGRESS AVENUE SITE

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RADIAN CORPORATION

TABLE OF CONTENTS

1.0 INTRODUCTION

This report presents a closure plan for the removal of contaminated materials from the 100 Congress Avenue site. This plan has been revised based on comments received from the Texas Department of Health and the Texas Water Commission.

1.1 Background

Lincoln Property Company (LPC) has planned the development of an office complex in the Central Business District of Austin. The 100 Congress Avenue site is bounded on the north by Second Street, on the east by Congress Avenue, on the South by First Street, and on the west by Colorado Street. Site development is proceeding with the construction of two multi-story office buildings adjacent to one another, referred to as PHASE I and PHASE II. Foundation plans for the buildings require excavation of soils and bedrock to approximately fifty feet below grade to provide adequate below-ground parking.

During excavation for the PHASE I building on the eastern half of the site, groundwater containing a hydrocarbon-like material was encountered at approximately the 40-foot level at the contact between the Colorado River alluvium and the underlying limestone and shale bedrock. A coal gasification ("Town Gas") plant was operated on the site from 1877 until 1928 and is the most possible source of this hydrocarbon contamination. The principal contaminants present in the groundwater are typical of those derived from coal tars which were produced as a waste or byproduct of the gasification process. Subsequent subsurface investigations revealed the presence of a coal tar body under the PHASE II building land.

Samples of groundwater, soil, and coal tar waste obtained from the site have been characterized. Analytical results, shown in Table 1-1 indicate that the waste body and contaminated media are not considered a hazardous waste under the criteria established by the U.S. Environmental Protection Agency (40 C.F.R. Part 261.20) Subpart C - Characteristics of Hazardous Wastes. Nevertheless, because of the presence of polyaromatic hydrocarbons

TABLE 1-1. RCRA CHARACTERIZATION

Parameter	SAMPLE (07-19-85) Soil[1]	(07-19-85) Soil[2]	(07-19-85) Water[3]	(10-23-85) Coal Tar Body[4]	(09-15-86) Coal Tar Body[5]
Corrosivity, pH (pH units)	6.29	6.34		10.15	7.2
Ignitability - aqueous (°F)			>160		
Ignitability - solids	No	No		No	No
Reactivity (+ or -)	-	-	-	-	
Percent Moisture (%)	10	18			
pH (pH units)			7.96		
RCRA Metals (mg/L):					
Silver (Ag)	0.017	0.015	<0.002	<0.002	<0.01
Barium (Ba)	0.56	0.36	0.28	0.025	0.91
Cadmium (Cd)	<0.002	<0.002	<0.002	<0.002	<0.01
Chromium (Cr)	0.024	0.022	0.130	<0.005	<0.01
Arsenic (As)	0.08	0.08	<0.06	<0.06	<0.125
Mercury (Hg)	<0.0002	<0.0002	<0.0002	<0.0002	<0.05
Lead (Pb)	<0.08	<0.08	<0.08	<0.08	<0.25
Selenium (Se)	<0.08	<0.08	<0.08	<0.08	<0.30
RCRA Herbicides				ND	ND
RCRA Pesticides				ND	ND

Note: [1]Soil from PHASE 1 building excavation pit.
[2]Soil removed from PHASE 1 building excavation pit and stored temporarily in warehouse.
[3]Water from PHASE 1 building excavation pit.
[4]Tar sample from warehouse hole.
[5]Composite of 3 tar samples from boreholes during subsurface investigation.

(PAHs) and other volatile organic compounds in the waste body itself, this closure plan has been prepared to guide the excavation, transportation, and disposal of the materials in a manner that:

1. Minimizes the need for further maintenance; and
2. Controls, minimizes, and eliminates, to the extent necessary to protect human health and the environment, post closure escape of waste or waste constituents to the groundwater, surface water, or atmosphere.

To accomplish this objective, LPC intends to remove all waste and waste residues from the PHASE II property.

1.2 Scope and Objective

This closure plan describes procedures for removing the coal tar body and contaminated soils from the future site of the PHASE II building. The plan incorporates a description (based on subsurface investigations) of the site to be closed (Section 2.0), the overall approach to closure activities (Section 3.0), a detailed description of closure procedures (Section 4.0), and a schedule for closure activities (Section 5.0).

2.0 SITE DESCRIPTION

The eastern portion of the 100 Congress Avenue site is presently under development with the PHASE I building which is nearing completion. The western portion of the site was formerly occupied by a warehouse which has been dismantled in preparation for construction of the PHASE II building. A subsurface investigation was recently conducted below the former warehouse, located at the corner of Colorado and West 2nd Street, to define the location of the coal tar body. The investigation consisted of drilling 121 borings in a grid pattern across the area and classifying the subsurface material based on visual observations as follows:

- uncontaminated soil (having no grain coating or odor),
- slightly contaminated soil (having odor but no grain coating),
- contaminated soil (having odor and grain coating), and
- coal tar.

In addition, isolated pockets of contaminated groundwater were also encountered. Figure 2-1 shows the general location of the coal tar body. Borehole data located the coal tar body at the northern end of the site. Locations of typical boreholes and logs of these boreholes are presented in Attachment 1. The coal tar body consists of a black solid to semi-solid material occurring in two lobes connected by a layer at the top of the two main bodies. Attachment 1 contains a plan view and two cross-sections which describe the shape and dimensions of the coal tar body.

Samples were obtained during borehole drilling and analyzed for several parameters including RCRA characteristics and specific coal tar constituents. The results of RCRA characterization for the coal tar were presented in Table 1-1 along with those of other coal tar, soil and water samples previously obtained from the site. Additional analytical results are given in Tables 2-1 and 2-2. The sample locations with respect to depth in the borehole are shown on the borehole logs, contained in Attachment 1.

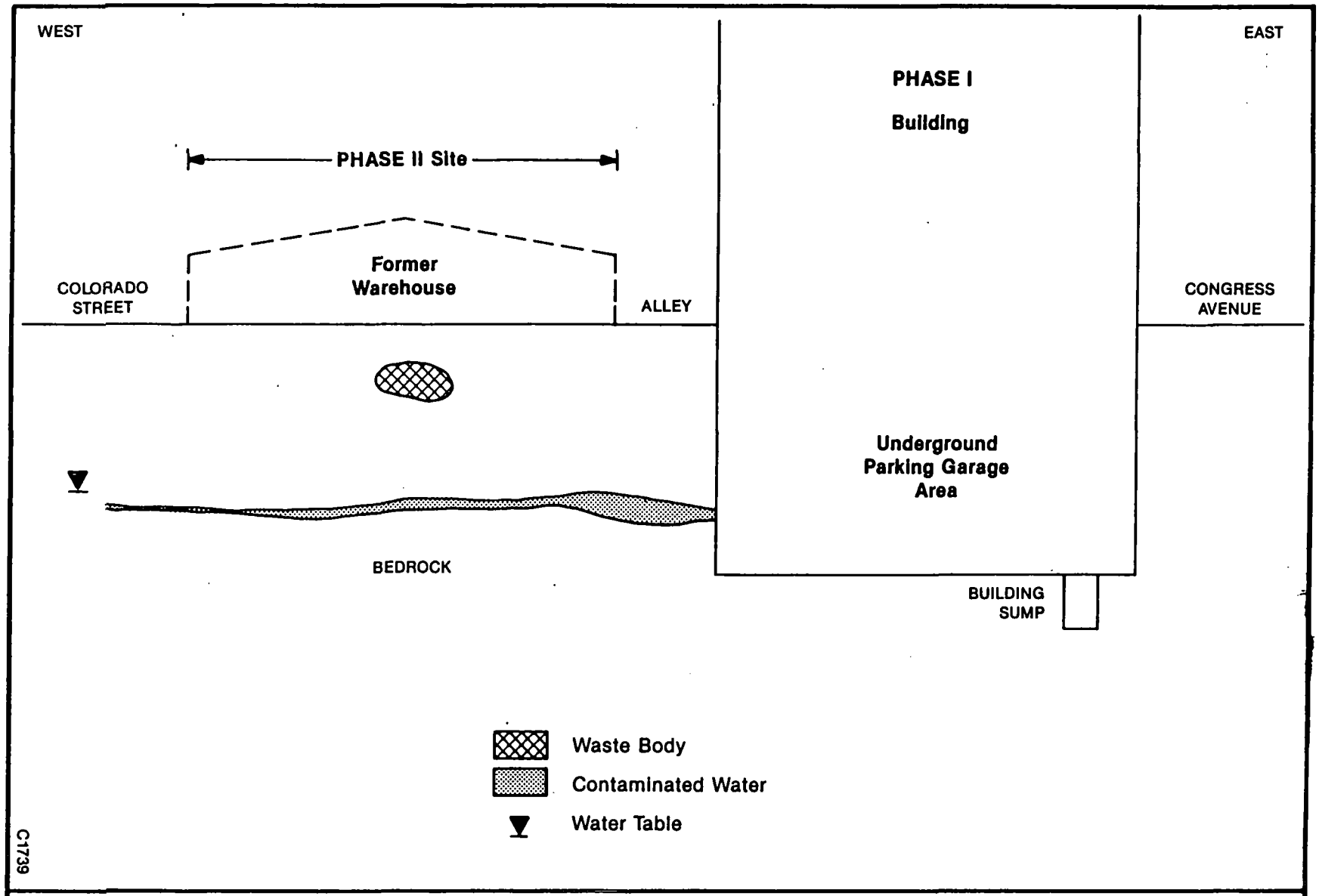

Figure 2-1. Location of Coal Tar Body Relative to Site Development

TABLE 2-1. ANALYTICAL RESULTS FOR BOREHOLE SAMPLES

Parameter	Visual Description[1]	Borehole #7 (SC)	#22 (UC)	#27 (UC)	#29 (SC)	#75 (CS)	#81 (CT)	#86 (CS)
Coal Tar Constituents (mg/kg)* (EPA Method 625)								
Phenol		TR	ND	ND	TR	ND	633	4.1
Napthalene		ND	ND	ND	ND	ND	4445	2.9
2,4-Dmethyl Phenol		ND	ND	ND	ND	ND	966	2.5
Phenanthrene		ND	ND	ND	ND	65.4	3092	ND
Anthracene		ND	ND	ND	ND	23.7	1236	ND

Notes:

*mg/kg is equivalent to parts per million (ppm).
ND indicates not detected.
TR indicates detected in trace amounts.
SC - slightly contaminated soil
UC - uncontaminated soil
CS - contaminated soil
CT - coal tar

TABLE 2-2. ANALYTICAL RESULTS FOR COAL TAR BODY (BOREHOLE #81)

Compound	Concentration (mg/kg)*
Benzene	72
Ethylbenzene	27
2,4-dimethyl phenol	966
Phenol	633
Toluene	165
m-xylene	102
o,p-xylene	90
Polyaromatic Hydrocarbons:	
Acenapthene	755
Acenapthylene	2,380
Anthracene	1,236
Benzo(a)anthracene	2,044
Benzo(a)pyrene	310
Benzo(b)fluoranthene	473
Benzo(k)fluoranthene	427
Chrysene	1,574
Dibenzo(a,h)anthracene	14
Fluoranthene	2,288
Fluorene	1,148
Indeno(1,2,3-cd)pyrene	124
Naphthalene	4,445
Phenanthrene	3,092
Pyrene	3,361

These analytical results indicate that visual observations of the soils encountered during the recent Phase II site investigation correspond well to the analytical data reported for these samples. Therefore, the closure activities will use visual observations of the remaining soils to determine when the coal tar body has been removed.

A program has been established to collect and treat, in accordance with all applicable regulations, the groundwater contaminated as a result of the presence of the coal tar body. The groundwater treatment system includes an activated carbon filtration system designed to remove coal tar constituents from the ground water.

3.0 APPROACH TO CLOSURE

LPC is proposing a two-phased approach to closure. Phase 1 will remove the coal tar body and the most highly contaminated soils (those in direct contact with the coal tar mass). Phase 2 will remove the remaining contaminated soil, thus completing closure. These two phases are discussed in detail in the following section.

Removal of the coal tar in Phase 1 will be based on visual observations, which appear to be an acceptable way to identify this material. Soils near the edge of the coal tar body will also be removed. Phase 1 excavation will be completed based on a visual interpretation of the soil. At this point, soil samples will be taken from the walls of the excavation to characterize the materials left in place. Samples will also be taken from the floor of the excavation unless this is bedrock.

Phase 2 will involve excavation of the remaining contaminated soils in conjunction with the PHASE II building development schedule. By removing all soils contaminated with coal tar from the PHASE II land, LPC will close the site in a manner that eliminates the need for future actions necessary to protect human health and the environment from future releases to groundwater, surface water, or air from the 100 Congress Avenue site.

4.0 CLOSURE PROCEDURES

As previously stated, LPC will take a two-phased approach to closure of the 100 Congress Avenue construction site. This section provides a detailed description of the proposed method for removing contamination from the site.

4.1 Steps in Closure

The removal of contaminated soils requires the execution of two distinct phases, each involving several sequential steps. The preliminary task of defining the boundaries of the coal tar body and the extent of soil contamination was discussed in Section 2.0.

4.1.1 Phase 1 Closure Activities

The objective of Phase 1 is to remove all of the coal tar body and in the process, remove the most highly contaminated soils in immediate contact with the coal tar body. The following steps are required:

1. excavation of coal tar;
2. transportation of excavated material to an approved disposal facility;
3. sampling and analysis of soils remaining in place; and
4. backfilling and landscaping.

It is anticipated that Phase 1 activities will commence soon after approval of this closure plan.

Excavation

The site will be surveyed to stake the boundaries of the coal tar body (determined by drilling boreholes during subsurface investigations) prior to excavation procedures. Excavation and movement of coal tar and surrounding soils within the site may be accomplished by the selected contractor using backhoes, front-end loaders, dozers, dump trucks, or other construction machinery. Removal will be based on the visual extent of coal tar, a black solid or semi-solid material.

Several methods of excavation are currently under consideration. Calculations are required to determine the side slope necessary to prevent a cave-in given physical properties of the coal tar and natural soils. If the excavation walls will not have adequate stability without excessive side slopes, the use of a retaining wall or other such device will be evaluated. An estimated 4,000 cubic yards of coal tar and associated soils will require disposal during Phase I. An additional quantity of soil will also be removed. The final determination of soil quantity will depend on the excavation method chosen.

The coal tar and surrounding soils, although considered nonhazardous as indicated by analytical results, require special handling by the Texas Department of Health (TDH) in accordance with Section 325.136 of the "Municipal Solid Waste Management Regulations" (MSWMR). A copy of these regulations are contained in Attachment 2. Contact with the skin, and storage or handling of the waste in enclosed areas should be avoided.

Transportation and Disposal

Excavated materials will be hauled to a local privately owned Type I landfill willing to accept the material. The landfill operator is required to contact TDH for authorization prior to accepting waste shipments. The landfill must provide for waste disposal in a cell, separated from other wastes and appropriately isolated and/or capped.

A disposal plan containing site-specific transportation and disposal methods will be submitted to TDH subsequent to the Department's approval of this overall closure plan and following contractor negotiations and selection.

As an alternative to landfill disposal, LPC is currently evaluating the possibility of recycling coal tar for use as fuel in a power plant boiler, if satisfactory arrangements can be made.

Soil Sampling and Analysis

In the process of excavating the coal tar body, surrounding soils will also be removed. When visual observations reveal that all of the coal tar body has been removed and soil is being excavated, samples of the soil will be obtained using a clean scoop. The samples will be placed in a glass container, preserved on ice, and brought to a lab for analysis. The samples will be analyzed for organic constituents previously found to be present in the coal tar (see Table 2.2). The objective of the sampling is to characterize the materials that will be left in place for Phase 2 closure activities.

In the interim period between Phase 1 and Phase 2 closure, the ground-water treatment system previously described in Section 2.0 will be continuously operated and ground water collected and treated in accordance with applicable regulations.

Backfill and Landscaping

The final step of Phase 1 will be to backfill the excavation with compacted soil and landscape the site.

4.1.2 Phase 2 Closure Activities

The objective of Phase 2 is to remove all remaining contaminated soils, thus finalizing the site closure. The following steps are required:

1. excavation of all remaining soils (both contamianted and uncontaminated;
2. transportation of contaminated material to an approved disposal facility; and
3. verification of completion of closure activities.

It is anticipated that this portion of the closure will commence within the next two years in accordance with the site development schedule but will be completed no later than 5 years from the date of approval of this closure plan. LPC will modify this closure plan if the schedule for final closure changes.

The excavation, transportation, and disposal procedures of Phase 2 will be similar to those followed for Phase 1 with respect to equipment used and handling requirements. Contaminated soils from the Phase 2 closure activities will be removed and properly disposed of. The quantity of excavated soils has not yet been determined. Plans for the PHASE II office building have been approved and construction will begin following excavation and the completion of site closure.

4.2 Equipment Decontamination

Procedures will be implemented for decontaminating equipment leaving the site as part of a system to prevent or reduce the physical transfer of contaminants by people or equipment. Hand tools and personal protective

equipment - boots, coveralls, respirators, etc. - shall be considered contaminated and be appropriately cleaned prior to removal from the site each day. All heavy machinery - backhoes, front-end loaders, dump trucks, etc. - will be decontaminated following the completion of each closure Phase.

In general, decontamination of smaller items at the site will consist of washing with a detergent solution and rinsing with copious amounts of water. Decontamination procedures will take place in a pre-designated area. Dirt on tools and boots will be removed as much as possible manually, then washed off and rinsed. Personal protective equipment will be either disposed of or decontaminated upon leaving the site. Disposable suits and coveralls, gloves, etc. will be placed in a drum, kept on-site, for disposal in a municipal landfill.

All equipment requiring decontamination will be air dried. Soap and water shall be readily available for use by personnel engaged in closure activities.

Decontamination of heavy machinery will consist of scraping all dirt and tar residues from the equipment. This will be followed by steam cleaning and a thorough rinse with water. All wash waters shall be directed to the excavation pit.

4.3 Safety

A safety contractor will be selected to prepare a Safety Plan that describes procedures to be followed to protect all personnel on-site and the public off-site. Attachment 3 provides a set of detailed specifications for preparing a Safety Plan. Of particular importance, the Plan must include the following information:

- o selection of adequate personal protective equipment;
- o establishment of work zones;

- o decontamination procedures;
- o emergency response procedures;
- o a personnel training program; and
- o a medical monitoring program.

The contractor will designate and maintain on-site a Safety Director. His responsibility is to enforce the Safety Plan by providing safety training to all personnel, supervising all necessary work place monitoring, and requiring all personnel who enter the site to wear appropriate protective clothing and follow all safety procedures.

4.4 Control of Air Emissions

During the Phase 1 excavation and transportation activities described in this closure plan, odors and emissions associated with coal tar will be controlled by the use of foaming agents and plastic sheeting. Foam will be used to reduce emmission from exposed surfaces, and plastic will be used to seal waste loads in the transportation trucks and to cover exposed surfaces at the excavation site during non-working hours. In addition, the excavation shall be accomplished in a manner to reduce, to the extent practical, the exposed surfaces of the waste body itself. Specifications for air emission control measures are contained in Attachment 4.

5.0 SCHEDULE

Following preparation of this closure plan, the Texas Department of Health and the Texas Water Commission reviewed and commented on this plan. Revisions the plan suggested by these agencies have been incorporated into the plan. A copy of the letter forwarding these comments is included as Attachment 5. Work to be completed before starting Phase I closure includes:

1. selection of a disposal facility;
2. preparation of excavation and transportation specifications; and
3. contractor selection.

Actual field work for Phase 1 is expected to take approximately one month.

Phase 2 closure activities will follow the planned site development schedule and are expected to commence within the next two years and will be completed no later than five years from the date of this closure plan.

6.0 REPORTING

A brief report will be prepared at the completion of each closure phase. The reports will summarize closure activities and note any problems encountered or necessary departures from approved closure procedures. Reports will be submitted to Texas Department of Health (TDH) within 60 days of completing field work.

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ATTACHMENT 1

100 Congress Avenue

Soil Boring Data

SCOPE

This survey was commissioned to identify the boundaries of the coal tar body beneath the Old Walter Tips warehouse at the corner of Colorado and West 2nd Street. A total of 121 borings were drilled in a grid pattern (20 foot offset) stretching over the entire site and into the adjacent alley. Representative samples were obtained on the basis of visual parameters, and chemical analyses were conducted on the following categories:

1) Soil with no grain coating or odor.

2) Soil with odor but no grain coating.

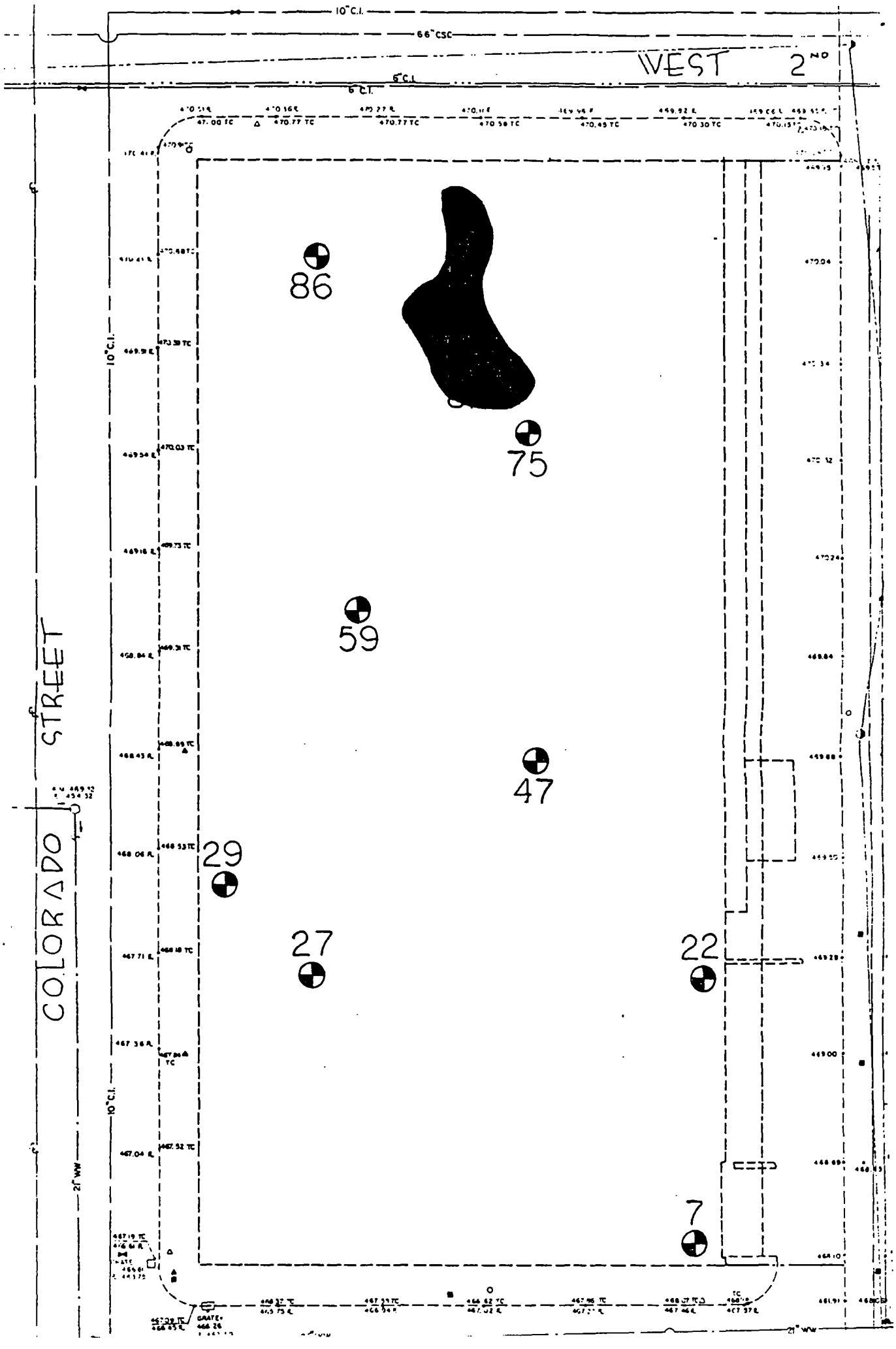
3) Soil with odor and grain coating.

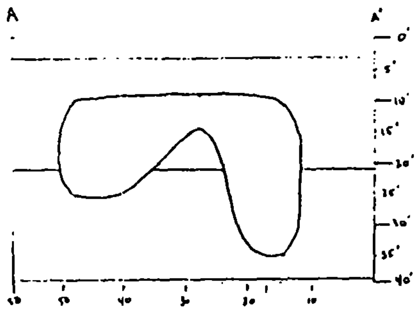
4) Coal Tar body.

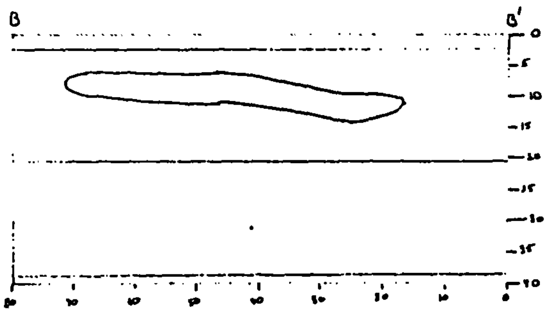
Borehole data isolated the body at the northern end of the site (Fig. 1) and also allowed the three-dimensional mapping of the structure (Fig. 2). Logs of the representative samples appear in Fig. 3.

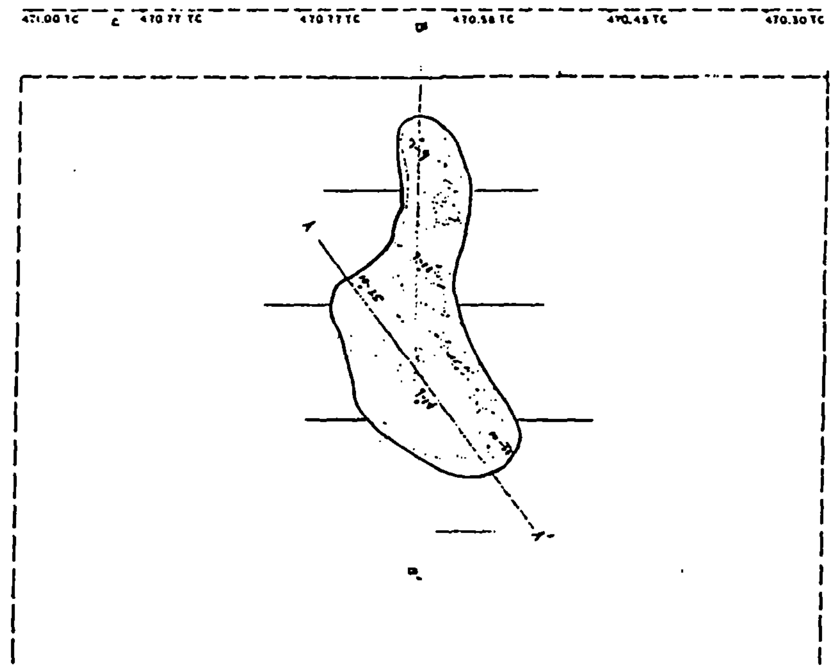
COAL TAR BODY

The coal tar body consists of a black solid to semi-solid material that occurs in two lobes that are connected by a five to nine foot thick layer at the top of the two main bodies. The northern boundary of the body occurs about ten feet (10') south of the northern boundary of the warehouse. Cross-section A-A' (Fig. 2) demonstrates the lobe characteristics while cross-section B-B' (Fig. 2) maps the layer connecting the two lobes.


10"C.I.
66"CSC
WEST 2ND
6"C.I.
86
75
59
47
29
27
22
7
COLORADO STREET
10"C.I.
21"WW

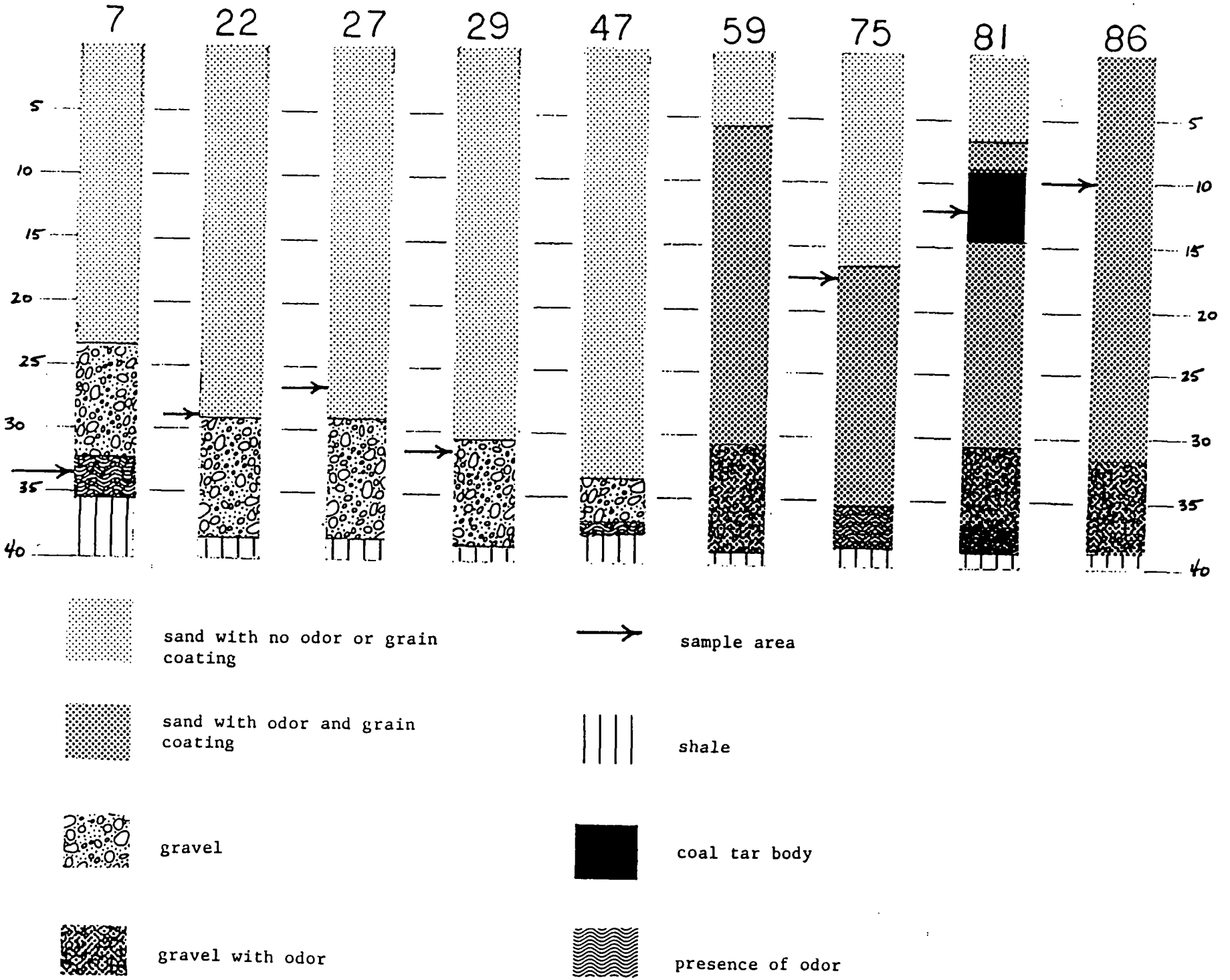






Coal Tar Body (including undiscernible soil and tar mixtures)

ENV. LAB



CHEMICAL ANALYSIS vs. VISUAL PARAMETERS

Samples #22 and #27 were classified as "clean" soils as they did not demonstrate an odor or grain coating. When chemical analysis for coal tar constituents was performed, none were detected. Sample #7 demonstrated an odor when obtained, and upon testing it was found to contain trace amounts of Phenol. Samples #75 and #86 both exhibited grain coatings as well as a distinct odor when sampled, and markedly higher concentrations of coal tar constituents were found to be present upon chemical analysis. It is therefore felt that visual parameters represent a reasonable method for the field classification of soils at the site. (Refer to Fig. 3 for sample locations.)

TESTING

SAMPLE #	#7	#22	#27	#29	#75	#81	#86
Coal Tar Constituents (EPA Method 625) (ug/g)							
Phenol	TR	ND	ND	TR	ND	NT	4.1
Napthalene	ND	ND	ND	ND	ND	NT	2.9
2,4-Dimethyl Phenol	ND	ND	ND	ND	ND	NT	2.5
Phenanthrene	ND	ND	ND	ND	65.4	NT	ND
Anthracene	ND	ND	ND	ND	23.7	NT	ND
RCRA Characteristics							
Ignitability (deg F) (Method AS3828)	NT	NT	NT	NT	NT	190	NT
Corrosivity (pH) (Method BLK422)	NT	NT	NT	NT	NT	7.2	NT
EP Toxicity (Method E200.7)							
Arsenic (mg/L)	NT	NT	NT	NT	NT	<0.125	NT
Barium (mg/L)	NT	NT	NT	NT	NT	0.91	NT
Cadmium (mg/L)	NT	NT	NT	NT	NT	<0.01	NT
Chromium (mg/L)	NT	NT	NT	NT	NT	<0.01	NT
Lead (mg/L)	NT	NT	NT	NT	NT	0.25	NT
Mercury (mg/L)	NT	NT	NT	NT	NT	<0.05	NT
Selenium (mg/L)	NT	NT	NT	NT	NT	<0.30	NT
Silver (mg/L)	NT	NT	NT	NT	NT	<0.01	NT

TR = Trace amount
ND = Not detected
NT = Not tested for

CONCLUSIONS

This site investigation indicates that the coal tar body exists only in the far north center of the site. It was found that well over 50% of the soil encountered had no visual contamination at all. Soils that exhibited an odor but no grain coating contained only trace or undetectable amounts of contaminants. These soils collectively constitute an estimated 65 to 75 percent of the total soil on site.

Visual parameters of the soils encountered appears to be a viable method of discerning relative degree of contamination, as these characteristics correlate well with chemical analyses performed on various samples.

MAXIM ENGINEERS, INC.

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ATTACHMENT 2

Excerpts from Municipal Solid Waste
Management Regulations

ATTACHMENT 3

Detailed Safety Specifications

Section A - SAFETY

A-1 SCOPE. This section outlines the requirements for preparation of a Safety Plan to be submitted by the Contractor. The Safety Plan shall address all aspects of on-site activities including mobilization/set-up, earthmoving, site closure, and demobilization.

A-2 GENERAL. The Contractor's Safety Plan shall meet all applicable Federal, state, and local requirements and guidelines in addition to the specific requirements presented in this section. A copy of the Safety Plan shall be submitted to Company for review. The Contractor shall identify the author(s) of the Safety Plan. Excavation at the site shall not begin until the Owner has accepted the Safety Plan.

A-3 RESPONSIBILITY. It shall be the responsibility of the Contractor to establish, implement, and enforce the Safety Plan in accordance with all applicable Federal, state, and local safety regulations.

Subcontractors and other agencies or firms involved in activities within the exclusion zone will be required to adopt the Contractor's safety plan as their own for use by all personnel in the Exclusion Area. The Contractor shall enforce the safety plan for Subcontractors and other agencies or firms having personnel in the Exclusion Area. The Contractor shall be responsible for the safety of his employees and their conformance to the safety plan.

A-4 FEDERAL AND STATE REQUIREMENTS. The Safety Plan shall incorporate all applicable federal and state guidelines and regulations including, but not limited to, the following:

- o Interim Standard Operating Safety Guides (U.S. EPA, Sept. 1982 draft).
- o U.S. EPA Occupational Health and Safety Manual.
- o Title 29, Code of Federal Regulations (CFR), 1983 Rev., Part 1910, Occupational Safety and Health Standards.

The Contractor shall be responsible for incorporating any updated versions of these safety guidelines and regulations into the safety plan.

A-5 CONTRACTOR'S SAFETY DIRECTOR. The Contractor shall require the services of an on-site Safety Director who will oversee the

preparation, implementation, and enforcement of the Safety Plan. The Safety Director shall have a minimum of 5 years working experience in safety work and shall also have a sound working knowledge of federal and state occupational safety and health regulations and formal training in occupational safety and health. The Safety Director shall have current credentials in CPR and first aid. The Safety Director shall be present during all site activities involving disturbance of contaminated soils. The names and work experience of the Safety Director(s) shall be submitted to the Company for approval before commencement of work.

The details of the Safety Director's job responsibilities shall be determined by the Contractor. These responsibilities shall include as a minimum:

- o Authority to enforce adherence to the Safety Plan.
- o Responsibility for determining the existence of any unsafe conditions and the authority to stop work until the unsafe conditions are corrected.
- o Responsibility for reviewing planned site activities and reviewing specific safety procedures for ensuring adherence to the Safety Plan.
- o Responsibility for developing and administering safety aspects of the Personnel Training Program.

A-6 SAFETY PLAN REQUIREMENTS. The Contractor shall develop a detailed Safety Plan which will be submitted to Company for review. Excavation at the site shall not commence until the Safety Plan has been accepted by Company.

The Safety Plan shall include, as a minimum, the following information:

a. Introduction.

Provide an overview of Contractor project responsibilities.

List Contractor key personnel specifying health and safety responsibilities of each.

b. Job hazard analysis.

Each job activity to be performed on the site shall be subjected to a job hazard analysis. The results of this analysis shall be presented in the Safety Plan. Specific hazards associated with each job function shall be identified

together with control measures which will be used to mitigate the hazards. The job hazard analysis shall also identify training and medical monitoring requirements for specific jobs.

c. Personal protective equipment (PPE).

Ensembles of protective clothing and equipment shall be specified for each job function identified in the job hazard analysis. Brief statements documenting the basis for selection of protective items shall be provided. Where air purifying respiratory protection is selected, the specific air purifying elements shall be identified together with a protocol for element replacement. The Contractor shall also describe the type of protective equipment which will be available for use in emergencies. Wearing protective clothing can also create heat stress problems. Work schedules for particular jobs shall be closely regulated lest heat stress become more of a threat than the chemical hazard.

d. Work zones and decontamination procedures.

Operation and location of exclusion, decontamination, and support zones shall be described together with the rationale which will be used to modify these zones as site work progresses. Decontamination procedures for routine work and for emergency extrication of injured or ill personnel shall be described. Decontamination procedures for personnel, protective clothing and equipment, and machines/tools shall be specified.

e. General PPE procedures and support facilities.

Describe facilities, equipment, and procedures for providing and maintaining the PPE.

Describe equipment and procedures for emergency/normal decontamination.

Describe the emergency response procedures (evacuation, fire, excessive emissions, etc.).

f. Workplace monitoring.

The type and frequency of workplace monitoring to be conducted to assure proper protection shall be specified. The workplace monitoring program shall include a description of the methods and procedures used to measure worker and community exposure to hazardous materials and shall include monitoring of worker exposure to heat stress.

The description shall also include requirements that the Contractor will observe before lowering the level of protection for particular phases of work.

These requirements shall detail how the Contractor will determine the level of exposure. A description of the sampling and analytical procedures, including field and lab verification procedures shall be provided in this section. In addition, the Contractor shall discuss the rationale used to lower the protection levels whenever contamination is determined to be less than one half the Permissible Exposure Limit (PEL). Accuracy of the PEL determination must be maintained within a plus or minus 50% range when determining exposure levels below one half of the PEL.

g. Personnel training program.

Describe the personnel training program. As a minimum, it shall include the information outlined under paragraph A-12, "Personnel Training Program."

h. Medical surveillance.

The Contractor shall describe the medical monitoring protocol and procedures which will be used to document employee fitness for initial work assignment, fitness following illness or injury, and project termination examination/release (see also paragraph A-11, Medical Monitoring Program).

i. Health and safety program documentation.

As a minimum, documentation shall include:

- o Medical records.
- o Training records.
- o Health and safety meeting reports.
- o Accident investigation reports.
- o Emergency reports.
- o Personnel exposure monitoring records.
- o Proof respirator fit test and which respirators each employee can wear.

j. Statement of applicable safety guidelines and regulations.

Demonstrate compliance with the guidelines and regulations.

Following acceptance of the Safety Plan by Company, the Safety Plan shall not be modified without specific approval of the Company's Representative.

A-7 PERSONAL PROTECTIVE EQUIPMENT. The Contractor shall determine the levels of protection required for all personnel within the site boundary and for each work zone within the site boundary, and shall be responsible for providing the required protective equipment to all people within the site boundary. Subcontractors and other agencies or firms with personnel in the Exclusion Area will have personal protective equipment provided to their employees by the Contractor in lieu of purchasing their own. This includes, but is not limited to:

- o Visitors (maximum of 3 persons).
- o Personnel employed by the Contractor.
- o Other agency's or firm's personnel not employed by the Contractor (maximum of 3 persons).
- o All subcontractors.
- o Company's personnel.

The Contractor shall also be responsible for cleaning, maintaining, and inspecting all personal protective equipment used within the site boundary.

In determining the level of protection and personal protective equipment required for each Work Zone, the Contractor shall reference the U.S. EPA levels of protection as described in the Interim Standard Operating Safety Guide (U.S. EPA, September 1982, draft).

The Contractor shall routinely monitor the workplace to assure that protective clothing and equipment being utilized are adequate for the hazards presents.

A-8 WORK ZONES. Parts of the site shall be designated by the Contractor as the Exclusion Zone. The Exclusion Zone is defined as any area on the site for which personal protective equipment is required for any person in that area. Any person within the Exclusion Zone requires the personal protective equipment specified by the Contractor in the Safety Plan. Any area of the site which is not part of the

Exclusion Zone or the Support Zone shall be designated the Contamination Reduction Zone.

An area within the Contamination Reduction Zone is designated the Contamination Reduction Corridor (CRC). The CRC controls access into and out of the Exclusion Zone and confines personnel decontamination activities to a limited area. Whenever possible, it should be a straight path.

The CRC boundaries should be conspicuously marked, with entry and exit restricted. The far end is the hotline--the boundary between the Exclusion Zone and the Contamination Reduction Zone. Personnel exiting the Exclusion Zone must go through the CRC. Anyone in the CRC should be wearing the Level of Protection designated for the excavation crew. Another corridor may be required for the entrance and exit of heavy equipment needing decontamination. Within the CRC, distinct areas are set aside for decontamination of personnel, portable field equipment, removed clothing, etc. These areas should be marked and personnel restricted to those wearing the appropriate Level of Protection. All activities within the corridor are confined to decontamination.

The limits of the Exclusion Zone, the Support Zone, and the Contamination Reduction Corridor shall be clearly marked. Levels of protection shall be as described in the Interim Standard Operating Safety Guide (U.S. EPA, September 1982, draft).

The Contractor may change the boundary of the Exclusion Zone at any time. The Company and all persons who would be affected by such a change, shall be informed prior to making a change in boundaries.

A-9 DECONTAMINATION SAFETY PROCEDURES. The Contractor shall maintain a personal decontamination area within the Contamination Reduction Zone. Soiled work clothes shall be laundered by the Contractor. Boots, gloves, and respirators shall be cleaned by decontamination washdown performed prior to entering other areas. All required breathing devices shall be provided and maintained by the Contractor.

The decontamination area shall also provide for performing equipment maintenance. Seats on equipment and vehicles used in the Exclusion Zone shall not be cloth covered. They shall be free from cracks or holes that would allow dust to enter seat padding or shall be enclosed with a sheet vinyl covering.

Any item leaving the Exclusion Zone must be assumed to be contaminated and must be inspected and/or decontaminated before the item leaves the area. All vehicles, equipment, and materials shall be cleaned to the satisfaction of the Company Representative prior to

leaving the site. Unless otherwise directed by the Company Representative, all construction materials for this project that will be used in the Exclusion Zone shall be delivered to the Support Zone. Materials shall then be rehandled and be brought into the Exclusion Zone in such a way as to minimize the potential for soils being carried out of the Exclusion Zone. Separate, clearly marked parking and delivery areas shall be established in the Support Zone.

A-10 EMERGENCY RESPONSE PROCEDURES.

A-10.1 General. As indicated in paragraph A-6, Safety Plan Requirements, plans are required for emergency response procedures for emergencies which may occur on-site or in areas adjacent to the site. For each of these emergencies, the Contractor is responsible for providing all equipment and personnel necessary for an appropriate emergency response, or ensuring that such equipment and personnel can be transported to the location of the emergency in a timely manner.

For each of these emergencies, Company shall be notified as soon as possible. In addition, a written report shall be submitted to the company within 24 hours of the emergency which details the emergency including causes, consequences, and actions taken.

A-10.2 On-site Emergency Response Procedures. Plans for the on-site emergency response procedure shall address, as a minimum, responses taken during emergencies such as:

- o Small fires.
- o Personal accident or illness (e.g., heat stress, laceration, etc.).
- o Excessive personal exposure to coal tar constituents (either either dermal or respiratory).

For each of these emergencies, the following applicable items should be addressed:

- o Evacuation plans.
- o Plans for alleviating the emergency condition.
- o Plans for requesting emergency response assistance, including ambulance, fire, hospital, police, and poison control centers.

A-10.3 Off-site Emergency Response Procedures. The plans for the off-site emergency response procedures shall address, as a minimum, responses taken during emergencies such as:

- o Small fires on or off site.
- o Personal accident.
- o Personal exposure to coal tar constituents above the limits defined in the applicable regulations and guidelines.

For each of these emergencies, the following applicable items should be addressed:

- o Evacuation plans.
- o Plans for alleviating the emergency condition.
- o Plans for requesting emergency response assistance, including ambulance, fire, hospital, police, and poison control centers.

A-11 MEDICAL MONITORING PROGRAM. The Contractor shall utilize the services of a licensed physician to provide the medical examinations and surveillance specified herein. The name of this physician shall be provided to Company prior to commencement of work at the site.

Contractor's personnel that will be working in the Exclusion Zone shall be provided with medical examinations prior to participation in operations within that area and at the conclusion of work. Medical examinations shall include a medical history and work history, a physical examination which includes vital signs and an evaluation of all major organ systems, a pulmonary function test which includes a Forced Expiratory Volume at 1 second. The physician shall provide a statement regarding each employee's fitness to work in air purifying respiratory protection, other protective equipment required by the Safety Plan, and in situations involving potential heat stress. Blood tests will include the full SMAC series (SMA 32) plus hemoglobin (cell counts, protein levels), and acetylcholinesterase activity. If employment is terminated for an individual prior to completion of the contract, an examination will be given.

Any employee who develops a time loss illness or injury during the period of the contract must be evaluated by the Contractor's physician. The Safety Director must be provided with a written statement indicating the employee's fitness signed by the physician prior to allowing the employee to reenter the work site. A copy of the written statement shall be submitted to the Company.

A-12 PERSONNEL TRAINING PROGRAM. The Safety Director shall be responsible for providing training on safety matters to all employees prior to the commencement of work. This training shall include, as a minimum, the following topics:

a. Acute and chronic effects of the chemicals identified at the site.

b. Requirement for personal protection, effectiveness, and limitations.

c. Proper use and fitting of respirator.

d. Prohibitions including beards and long sideburns, contact lenses, eating, smoking, chewing, personal articles (e.g., watches, rings), working when ill.

e. Buddy system explained.

f. Medical examinations.

g. Personal protective equipment, levels of protection, and work zone definition and delineation.

h. Personal and equipment decontamination procedures.

i. The emergency response procedures and their purpose.

j. Other applicable sections of the Final Safety Plan.

k. General health and safety practice.

The Safety Director shall also provide initial training to new employees using the original training outlines.

RADIAN
CORPORATION

ATTACHMENT 4

Air Emission Control Specifications

SECTION B. ODORS AND AIR EMISSIONS

B-1 SCOPE This section outlines the requirements for control of odors during excavation activities.

B-2 GENERAL The contractor shall make preparations for controlling odors and emissions form the excavation in the event such odors or emissions create a nuisance outside the immediate construction area. Excavation shall not begin until the owner is satisfied that the contractors preparations are adequate.

B-3 RESPONSIBILITY It shall be the responsibility of the Contractor to prepare, implement, and enforce odor control measures in accordance with all local regulations.

B-4 CONTROL OF ODORS DURING EXCAVATION Excavation activities to be conducted in a manner which minimizes odors and air emissions.

The capability to dispense temporary and rigid foams to control emissions shall be maintained at all times that excavations of waste are underway. in addition, membranes shall be used as necessary to control air emissions.

Waste loads leaving the site to be sealed against excessive air emissions by folding the truck bed liner over the load and application of rigid foam, if necessary.

Excavation activities to be curtailed and the excavation site to be sealed with foam, membrane and soil when excessive air emissions or unfavorable weather conditions prevail.

Acceptable types of foams are described in Exhibits B-1 and B-2.

B-5 AIR MONITORING A full-time site operator will be responsible for the operation, calibration, and maintenance of air monitoring instruments capable of providing real time monitoring of the air emissions from the excavation activities. Responsibilities during operation will include: proper placement of monitoring instruments, documentation of data, and surveillance of instrument response. The operator will be responsible for notifying the excavation supervisor of conditions immediately downwind from the excavation at the property line.

ACCEPTABLE TEMPORARY AIR EMISSION CONTROL FOAM SYSTEM
F. M. CHEMICAL CO., INC.

F. M. Chemical Co. Inc. of Ontario, California can provide the mobile foam dispensing unit described below. This unit is considered to be typical of appropriate temporary foam systems.

Temporary Foam Proportioning Unit

1. 1200 gallon water tank - properly baffled and vented.
2. 200 gallon stainless steel foam concentrate tank baffled and vented.
3. Air cooled diesel engine and pump package.
4. Two 1-1/2" hose lines, 200 ft. long (each.)
5. Necessary pipe valves and proportioners to provide 6% foam solution at 60 and 120 G.P.M.
6. Heavy duty 3 axle trailer.
7. Electric brakes

Water is added to the 1200 gallon tank on an as needed basis.

200 gallons of foam concentrate will produce approximately 3400 gallons of 6% solution.

3400 gallons of solution @ 8-1 expansion ratio will cover approximately 40,800 sq. ft. of toxic material.

The system water tank would be refilled 3 times from a water tanker truck for each 40,000 sq. ft. of ground coverage.

ACCEPTABLE PERMANENT AIR EMISSION CONTROL FOAM SYSTEM
SANIFOAM, INC.

S P E C I F I C A T I O N

DAILY PLASTIC FOAM LANDFILL COVER

I. OPERATIONAL PROPERTIES

SOIL COVER EQUIVALENCE - - provide daily cover performance of 6" compacted soil with 1" foam blanket.

COVERAGE RATE - - daily cover applied at rate of 4000 square feet per 20 - 30 minutes.

RODENT CONTROL - - provide environment hostile to rodents; discourage burrowing.

VECTOR CONTROL - - contribute no nutrients; seal waste from air; contain waste-borne flies.

DUST CONTROL - - contribute no airborne dust.

LITTER CONTROL - - provide temporary and daily rapid cover.

ODOR CONTROL - - seal odor causing gases; provide for rapid and continuous coverage of wastes during day.

FIRE PERFORMANCE - - no contribution to combustibility and minimize fire hazard.

Fuel content 0 (ASTM E84).

Ignition temperature greater than 1200°F.

Smoke density less than that of red oak (ASTM E84).

S P E C I F I C A T I O N

I. OPERATIONAL PROPERTIES (Contd.)

FIRE PERFORMANCE (Contd.)

Gaseous byproducts of high-temperature exposure 1300°F: HCN, NH_3, CO; each within OSHA standards for workplace

Relative inhalation toxicity - - less than that of plywood (Fed. Haz. Subst. Act 191 (f) (2).

Fire containment - - add no fuel; seal fire from air.

COMPRESSIBILITY - - compresses to less than 1/10th its initial volume during next day's landfill operations.

II. LANDFILL COMPATIBILITY PROPERTIES

APPLICATION CLIMATE --

Temperature - - can be applied at any ambient, with protection of solutions and material lines.

Winds - - can be applied in moderate winds (up to 25 mph).

Rain - - can be applied during light to moderate rainfall.

LANDFILL METHOD COMPATIBILITY - - useful for area, trench and ramp landfill designs.

LANDFILL CAPACITY - - extends capacity for waste material up to 30%

CONTOURING - - no influence on final landfill cover contour.

EROSION CONTROL - - provide for daily surface contouring; steep angle capability.

RUNOFF CONTROL - - foam skin to support runoff; can be shaped to channel runoff.

MOISTURE RETENTION - - no negative impact on leachate migration in landfill.

VEGETATION - - allow plant growth and rooting in foam if part of final cover.

S P E C I F I C A T I O N

III. PHYSICAL PROPERTIES

DENSITY - - fresh 2.5 - 1.8 lbs./cu. ft.; dry 1.0 - 0.7 lbs./cu. ft.

STRUCTURE - flexible foam of mixed closed and open cell composition with inter-connecting capillaries.

CURING - - setting time from fresh, wet foam to solid foam 10 - 60 seconds.

SKIN CHARACTER - - reflective resilient foam surface; support water runoff 15 minutes after application.

STABILITY - - susceptible to long term UV exposure; insoluble in water; acid resistant; melting point above 400°F.

WORKABILITY - - provide for coverage of waste of all shapes, including vertical surfaces.

SHRINKAGE - - linear shrinkage less than 1% within 72 hours of application.

STRUCTURE CAPILLARITY - - resists intrusion of liquids with high surface tension (water = 72 dynes/cm), but permits penetration of liquids with lower surface tensions.

VAPOR TRANSMISSION - - first two days less than 5 perm/in.; thereafter less than 10 perm/in. (ASTM C355).

WATER ABSORPTANCE - - water acceptance 60% by volume under 2" head over 24 hours.

OLEOPHILICITY - - high affinity and holding capacity for oily liquids and solvents.

IV. CHEMICAL PROPERTIES

FOAM COMPOSITION - - stable aminoplast resin; two liquid components; extruded with gaseous nitrogen; pH 5 to 7.

S P E C I F I C A T I O N

IV. CHEMICAL PROPERTIES

SOLVENT - - 16% aqueous sodium hydroxide solution. (Degradation)

EXPLOSION HAZARD - - contains no and will not liberate gaseous oxygen.

COMPATIBILITY WITH WASTE PRODUCED GASES - - no hazardous reaction with methane, carbon dioxide, nitrogen, hydrogen and hydrogen sulfide, amonia, phosphine.

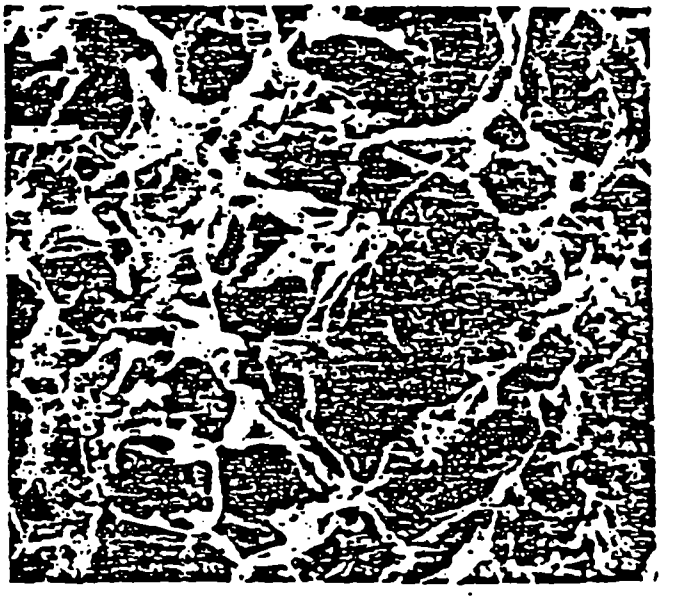
SPONTANEOUS LEACHATE PRODUCTION - - none.

POTENTIAL WATER EXTRACTABLES - - satisfies EPA criteria for sanitary landfills.

Inorganics - - phosphoric acid and its derivatives

Organics - - urea derivatives; dihydroxymethane

POTENTIAL GASEOUS EXTRACTABLES - - trace quantity of formaldehyde.



Cell Structure Magnified 200 Times

ATTACHMENT 5

Comments from Texas Department of Health
and Texas Water Commission

Texas Department of Health

Robert Bernstein, M.D., F.A.C.P.
Commissioner

1100 West 49th Street
Austin, Texas 78756-3199
(512) 458-7111

Robert A. MacLean, M.D.
Deputy Commissioner
Professional Services

Hermas L. Miller
Deputy Commissioner
Management and Administration

OCT 2 8 1986

Mr. Kevin A. Fleming
Construction Manager
Lincoln Property Company
600 Congress Ave., Suite 2180
Austin, Texas 78701

Subject: Solid Waste - Travis County
Closure Plan for Contaminated Property in the 100 Block of Congress Avenue

Dear Mr. Fleming:

The Division of Solid Waste Management, Texas Department of Health (TDH) has reviewed the proposed closure plan submitted on October 21, 1986. We sent a copy of the proposed plan to the Hazardous and Solid Waste Division of the Texas Water Commission (TWC) and have received their comments.

The plan proposes a two step closure plan. In Step I of the plan, the body of residual coal tar and immediately surrounding soil will be removedfrom the site and disposed of under a disposal plan which is to be submitted to TDH after completion of an evaluation of alternative disposal options. The excavation will then be filled and the property landscaped pending initiation of the second phase of construction at the site. In Step II of the plan, the remaining contaminated soil on site will be removed as part of the excavation for the second phase of construction. Step II is expected to be completed within two years but in not more than five years.

TDH has the following comments regarding the two step proposal referred to hereafter as the Closure Plan. **First**, unless the Step I excavation extends to bedrock, samples should be collected from the floor of the excavation as well as the sidewalls of the excavation (Closure Plan Section 3.0, second paragraph, page 9). **Second**, TDH interprets the statement regarding analysis of samples in Section 4.1.1 to mean that the samples will be subjected to analysis for the constituents listed in Table 2.2 (page 7) of

the Closure Plan. **Third,** the reference to exposure to pesticides found in Section A-10.2 of Attachment 3 is not appropriate and should be changed to exposure to coal tar constituents. **Fourth,** a representative of the TDH Occupational Health Program has briefly reviewed Attachment 3 and found the proposal to be adequate with the caution that respirators have certain limitations in confined spaces/oxygen deficient atmospheres. The Project Safety Officer should be aware of these limitations in the context of workers in a deep excavation where heavy equipment exhausts are present as well as the coal tar waste.

The Department is satisfied with the proposed two step closure plan subject to the comments cited above. You may proceed with the plan.

If you have any questions concerning this letter or if we may be of any assistance to you regarding solid waste management, you may contact L. E. Mohrmann, Ph.D., C.P.C., here in Austin at telephone number 458-7271.

Sincerely yours,

L E Mohrmann C.P.C.

for L. B. Griffith, Jr., P.E., Chief
Surveillance and Enforcement Branch
Division of Solid Waste Management

LEM:gsr

cc: Region 6, TDH
Mr. John Willard, Occupational Health Program
Mr. C. J. Hall, P.E., Texas Water Commission
Mr. Robert C. Wallace, Radian Corporation

(i) The containers are triple-rinsed prior to receipt at the site;

(ii) The containers are rendered unusable prior to or upon receipt at the site; and

(iii) The containers are covered by the end of the same working day they are received.

(B) Those containers for which triple-rinsing is not feasible or practical (paper bags, etc.) may be disposed of provided either of the disposal procedures listed in clauses (i) and (ii) of this subparagraph is followed:

(i) The waste is placed in the active disposal area and covered with at least three feet of municipal solid waste; or

(ii) The waste is placed in a specially designated area and covered with at least two feet of compacted soil.

(C) Salvaging and/or scavenging of the containers shall not be allowed under any circumstances.

(9) Municipal hazardous waste from small quantity waste generators (SQWG) who are subject to regulation under subsection (f) of §325.298 of this title (relating to Special Requirements for Small Quantity Generators) may be accepted at a Type I municipal solid waste site without further approval. A SQWG qualifies under this provision if he generates less than 100 kilograms of municipal hazardous waste in a calendar month and accumulates less than 100 kilograms of municipal hazardous waste on site.

Municipal Solid Waste Management Regulations

Volume 1: General and Nonhazardous Solid Waste Regulations

This volume contains those sections of the Texas Department of Health's municipal solid waste management rules which deal with the nonhazardous portion of the municipal waste stream. Rules governing hazardous waste under the department's jurisdiction are contained in Volume 2: Hazardous Waste Management.

Rules in this volume incorporate revisions adopted by the Texas Board of Health on June 18, 1983, which have an effective date of July 12, 1983.

In the future, minor revisions will be made by issuing substitution pages.

Texas Department of Health
Bureau of Solid Waste Management
1100 West 49th Street
Austin, Texas 78756
(512) 458-7271

Special waste - Any solid waste or combination of solid wastes that because of its quantity, concentration, physical or chemical characteristics or biological properties require special handling and disposal to protect the human health or the environment. If improperly handled, transported, stored, processed or disposed of or otherwise managed, it may pose a present or potential danger to the human health or the environment. Special wastes include, but are not limited to:

(A) Hazardous waste from small quantity generators, see Section 325.298 of this title (relating to Special Requirements for Small Quantity Generators), that may be exempt from full controls under Sections 325.271 - 325.350 of this title (relating to Hazardous Waste Management).

(B) Class I industrial non- hazardous waste not routinely collected with municipal solid waste;

(C) Infectious and pathological wastes from health care facilities, veterinary hospitals, or laboratories;

(D) Municipal wastewater treatment plant sludges to include other type domestic sewage treatment plant sludges that have not been treated by one of the processes prescribed in federal regulations under 40 CFR Part 257, Appendix II.

(E) Septic tank pumpings;

(F) Grease and grit trap wastes;

(G) Wastes from commercial or industrial wastewater treatment plants (except domestic sewage); air pollution control facilities; and tanks, drums, or containers used for shipping or storing any material that has been listed as a hazardous constituent in 40 CFR Part 261, Appendix VIII, but has not been listed as a commercial chemical product in 40 CFR Section 261.33(e) or (f);

(H) Slaughterhouse wastes;

(I) Dead animals;

(J) Drugs, contaminated foods or drink products, other than those contained in normal household waste;

(K) Pesticide (insecticide, herbicide, fungicide, or rodenticide) containers; and

(L) Discarded materials

§ 325.136 Disposal of Special Wastes.

(a) Disposal of special wastes not specifically provided for under subsection (b) of this section, requires prior written approval from the bureau.

(1) Approvals will be waste specific/site specific and will be granted only to appropriate sites operating in general compliance with these regulations, not including Type IV sites.

(2) Requests for approval to accept special wastes other than those hauled in vacuum trucks shall be submitted to the bureau by the site operator and must include, but are not limited to:

(A) A letter from the generator providing a complete description of the chemical and physical characteristics of each waste, a statement as to whether or not each waste is a Class I waste as defined in § 325.5 of this title (relating to Definitions of Terms and Abbreviations), and the quantity and rate at which each waste is produced and/or the expected frequency of disposal.

(B) An operational plan containing the proposed procedures for handling each waste and listing available protective equipment for operating personnel and on-site emergency equipment.

(C) A contingency plan outlining responsibility for containment and cleanup of any accidental spills occurring during the delivery and/or disposal operation.

(3) Prior to allowing vacuum trucks to discharge wastes at a municipal solid waste disposal site, the site operator shall have a bureau-approved written quality control plan, which assures that there is no reasonable probability that the receipt of vacuum truck wastes would cause an adverse effect on the public health or the environment.

(A) Vacuum trucks, as used in this section, refers to any vehicles which transport liquid or semi-solid wastes to a solid waste disposal site.

(B) The quality control plan shall assure adequate control over the waste stream to minimize the possibility of accepting unauthorized wastes by providing for:

(i) A system that clearly establishes:

(I) The identity and telephone number of each generator;

(II) The type and quantity of waste obtained from each generator;

(III) The total quantity of waste making up each load; and

(IV) The identity of the responsible hauler.

(ii) A system by which the hauler verifies that the information provided with each load is true and correct to the best of his knowledge.

(iii) A system by which the site operator checks the information provided by the hauler to include:

(I) Spot checks of at least 10% of the generators; and

(II) Comparison of actual load volumes with the reported volume for each load.

(C) The quality control plan shall provide for:

(i) Protection for groundwaters including:

(I) Handling procedures to minimize any potential increase in leachate production; and

(II) Lining of any designated vacuum truck waste ponds.

(ii) Procedures to maintain operational compliance of the site by:

(I) Preventing vector breeding;

(II) Preventing obnoxious odors;

(III) Requiring trucks to arrive at such a time during the day, week, or month to assure adequate waste exists for absorption of the vacuum truck wastes in the active working face; and

(IV) Timely application of intermediate cover.

(D) The quality control plan shall indicate the anticipated frequency of accepting vacuum trucks, the volume of waste necessary to absorb the vacuum truck waste when received, and a method to assure that the volume of waste will be adequate at the time the vacuum truck arrives.

(E) The quality control plan shall provide for procedures to be followed in the event a vacuum truck is turned away from the site as a result of inaccurate or falsified information. The incident must be reported to the appropriate local agency or entity for enforcement action.

(F) A trip ticket, an example of which is shown in §325.906 of this title (relating to Appendix F-- Form for Vacuum Truck Trip Ticket) should be used by all haulers to document the type and quantity of waste being delivered. Such trip tickets should be made out in triplicate in order that the hauler and the local governing agency or entity may have copies, while the site operator retains the original for at least one year from the date of receipt. If such a trip ticket is used, the retention of a copy of the trip ticket from a hauler who is turned away from the site should be a part of the plan.

(4) The bureau may on its own issue approval without a written request; however, in such cases the site operator is not required to accept the waste.

(5) The bureau may revoke authorization to accept a special waste if site operation does not maintain general compliance with these rules or conditions imposed in the authorization to accept a special waste.

(6) If required by the bureau, a site accepting special wastes shall submit to the bureau a monthly summary of special wastes received. This report shall be submitted by the 10th day of the month following the month the waste was received. Reports shall be submitted on forms provided by the bureau. Failure to file required reports in a timely manner shall be a violation of these rules.

(b) Receipt of the following special wastes do not require written authorization from the department for acceptance provided the waste is handled in accordance with the noted provisions for each waste.

(1) Infectious or pathological wastes from laboratories, research facilities, and health and veterinary facilities may be accepted at a Type #I municipal solid waste site without further written approval if the wastes are double-bagged in plastic bags not less than 1.5 mils thick each and conspicuously marked. The waste shall not be commingled with routine solid waste, but shall be segregated for special collection and transportation. The wastes shall be covered with three feet of other solid waste or two feet of soil immediately upon receipt.

(2) Dead animals and/or slaughterhouse waste may be accepted at a Type I, II, or III municipal solid waste site without further approval provided the carcasses and/or slaughterhouse waste are disposed of in accordance with the following:

(A) For Type I sites - Waste shall be covered by three feet of other solid waste or two feet of soil immediately upon receipt.

(B) For Type II and III sites - Waste shall be covered by at least two feet of soil immediately upon receipt.

(3) Water supply treatment plant sludges containing a minimum of 10% solids, which are not hauled in vacuum trucks, may be accepted at a Type I, II, or III municipal solid waste site.

(4) Stabilized sludges from domestic wastewater treatment plants containing a minimum of 10% solids, which are not hazardous and are not hauled in vacuum trucks, may be accepted at a Type I, II, or III municipal solid waste site. Quantities shall be limited to that which can be adequately handled at the site without creating odor problems and shall be placed on the working face along with other solid waste and covered with soil or solid waste on the day received.

(5) Unstablized sludges, which have passed through primary and secondary digestors, from domestic wastewater treatment plants may be accepted at a Type I municipal solid waste site without further written authority when the sludge is:

(A) Composed of at least 10% solids and is hauled in other than vacuum trucks (for vacuum truck wastes see subsection (a)(3) of this section.);

(B) Placed on the working face along with other municipal solid waste;

(C) Covered at the end of the working day with at least six inches of soil; and

(D) Determined to be nonhazardous.

(6) Friable asbestos waste may be accepted at a Type I site in accordance with the procedures in subparagraphs (A) - (G) of this paragraph.

(A) The site operator contemplating acceptance of friable asbestos waste shall notify the regional director of environmental and consumer health protection in the appropriate department regional office or the Surveillance and Enforcement Division of the bureau in Austin.

(B) Delivery of the friable asbestos waste to the site shall be coordinated with the on-site supervisor so the waste will arrive at a time it can be properly handled and covered.

(C) Friable asbestos waste shall be accepted at the site only in a wetted condition and in tightly closed and unruptured containers or bags as approved by the TACB.

(D) The bags or containers holding the friable asbestos waste shall be placed below natural grade level. Where this is not possible or practical, provisions shall be made to ensure that the waste will not be subject to future exposure through erosion or weathering of the intermediate and/or final cover.

(E) The bags or containers holding the friable asbestos waste shall be carefully unloaded and placed in the final disposal location rather than dumped. They shall be covered immediately with 12 inches of clean earthen material or three feet of solid waste containing no asbestos. Care shall be exercised in the application of the cover so that the bags or containers will not be ruptured.

(F) A contingency plan in the event of accidental spills (ruptured bags or containers) shall be prepared prior to accepting friable asbestos wastes. The plan shall specify the person(s) responsible and the procedure for collection and disposal of the spilled material.

(G) Asbestos waste which has been designated as a Class I waste may be accepted by a Type I municipal landfill provided the waste is handled in accordance with the provisions of this paragraph and the provisions of subsections (b)(1)(E), (e), (f), and (g) of § 325.137 of this title (relating to Disposal of Class I Wastes).

(7) Nonfriable asbestos may be accepted for disposal at any municipal solid waste landfill provided the wastes are placed on the active working face and covered in accordance with these regulations. Under no circumstances shall any material containing nonfriable asbestos be placed on any surface or roadway which is subject to vehicular traffic or disposed of by any other means by which the material could be crumbled into a friable state.

(8) Empty containers which have been used for pesticides, herbicides, fungicides, or rodenticides may be disposed of in accordance with subparagraphs (A) and (B) of this paragraph.

(A) These containers may be disposed of at a Type I, II, or III site provided: